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89-196

Supreme Court, U.S.  
FILED

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IN THE  
SUPREME COURT OF THE UNITED STATES  
OCTOBER TERM, 1988

RAILROAD COMMISSION OF TEXAS,  
*Petitioner*

V.

FEDERAL ENERGY REGULATORY COMMISSION,  
*Respondent*

Appendix To Petition For Writ Of Certiorari  
To The United States Court Of Appeals  
For The Tenth Circuit

VOLUME 2

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## TABLE OF CONTENTS OF APPENDIX

	Page
<b>EXHIBIT A</b>	
Opinion and Judgment of the United States Court of Appeals for the Tenth Circuit, reported at 874 F.2d 1320 (10th Cir. 1989). . . . .	A-1
<b>EXHIBIT B</b>	
FERC Opinion No. 239, reported as <i>Stowers Oil and Gas Co., et al.</i> , 32 FERC ¶ 61,043 (1985). . . . .	B-1
<b>EXHIBIT C</b>	
FERC Order denying Motions for Stay and Requests for Rehearing, reported at 33 FERC ¶ 61,207 (1985). . . . .	C-1
<b>EXHIBIT D</b>	
Recommended Decision of Administrative Law Judge, reported at 30 FERC ¶ 63,017 (1985). . . . .	D-1
<b>EXHIBIT E</b>	
Railroad Commission of Texas Amended Final Order, Oil and Gas Docket No. 10-87,017. . . . .	E-1
<b>EXHIBIT F</b>	
Relevant Sections of the Texas Natural Resources Code, including: 81.051-53; 85.041-.055; 85.201-.202; 85.241; 86.002; 86.011-.012; 86.041-.042; 86.081-.084; 86.093-.097. . . . .	F-1
<b>EXHIBIT G</b>	
Relevant Sections of Volume 16 of the Texas Administrative Code, including Sections: 3.10; 3.13; 3.39-.40; 3.69. . . . .	G-1





**EXHIBIT D**

**UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY  
COMMISSION**

Stowers Oil & Gas Company, Docket No. GP84-23-000  
*et al.*

**RECOMMENDED DECISION  
(January 16, 1985)**

**TABLE OF CONTENTS**

I. APPEARANCES . . . . .	1
II. BACKGROUND . . . . .	2
III. ISSUES . . . . .	3
IV. FACTS . . . . .	3
V. ARGUMENT . . . . .	15
VI. FINDINGS . . . . .	34
VII. REMEDY RECOMMENDED . . . . .	46

APPENDICES A, B AND C

**I. APPEARANCES**

*Thomas K. Anson and P.M. Schenkkan* for Anadarko  
Production Company and Pan Eastern Exploration  
Company.

*Robert W. Clark, III, Maston C. Courtney and D. Patrick Long* for Cabot Pipeline Corporation.

*William M. Lange and Nancy A. White* for Colorado Interstate Gas Company.

*Thomas H. Burton* for Conoco, Inc.

*Norman A. Flaningam and Karol Lyn Newman* for Consolidated Royalty Owners, Inc.

*Philip R. Ehrenkranz, R. David Kitchen and James L. Trump* for Dorchester Gas Producing Company.

*Paul W. Fox and Charles H. Shoneman* for Getty Oil Company.

*Jody G. Sheets* for Lucky Bird Petroleum.

*Michael H. Loftin and R.A. Wilson* for Meyers Farms, Inc.

*J. Paul Douglas* for Mobil Producing Texas and New Mexico, Inc.

*Joseph Wells* for Natural Gas Pipeline Company of America.

*Patrick J. McCarthy and Steve Stojic* for Northern Natural Gas Company.

*Larry J. Laurent, W. Scott McCollough, Jim Mattox, and David R. Richards* for the State of Texas.

*Jerry D. Courtney, Ivan D. Hafley, Charles A. Moore, Robert W. Perdue, Daniel G. Shillito, and Michael K. Swan* for Stowers Oil and Gas Company, et al.

*Joe H. Foy and Gail S. Gilman for J. B. Watkins.*

*Nathan Fishkin, Robert Fleishman, Michael T. Mishkin and Steven Ross for the Federal Energy Regulatory Commission's Enforcement Staff.*

Murray, Presiding Administrative Law Judge:

## II. BACKGROUND

On February 15, 1984, this Commission ordered 37 oil well operators in the Panhandle West Gas Field in Texas (respondents) to show cause why they have not violated certain Federal laws (Show Cause Order, 26 FERC 61,207). Specifically the Commission ordered respondents to show that they are not violating and have not violated Section 7(b) of the Natural Gas Act (NGA) and Section 504 (a) (1) of the Natural Gas Policy Act of 1978 (NGPA) by producing and selling in intrastate commerce natural gas which was committed or dedicated to interstate commerce and/or charging and collecting prices in excess of the lawful maximum. The essence of the allegations is that respondents are producing and selling gas which is covered by a sales contract between non-respondent Dorchester Gas Producing Company (Dorchester) and Northern Natural Gas Company, Division of InterNorth, Inc. (Northern Natural) and which was dedicated to interstate commerce on June 7, 1954, long before any of respondents' well were drilled.

The respondents and the oil wells they operate are listed in Appendix A attached hereto. The parties agree that the well on the J.B. Watkins Bell B lease should be eliminated from the list since gas is not being sold from the lease.

This proceeding could have two phases. If in phase one the Commission finds that the alleged violations have occurred, phase two will consider the appropriate monetary remedies. I have held hearings and received briefs on the issues in phase one.

Numerous proceedings involving many of the same parties and related issues have been decided or are pending in the Texas courts and before the Texas Railroad Commission.

### ***III. ISSUES***

The issues are:

1. Whether 34 of the respondents, all except Komanche Oil & Gas, Stowers Oil & Gas, and J.B. Watkins, have sold and are selling in intrastate commerce gas previously dedicated to interstate commerce and at prices above the maximum allowed under Section 104 of the NGPA. Such actions would violate (1) section 7(B) of the NGA which requires that dedicated gas continue in interstate commerce until this Commission grants an abandonment application, unless NGPA Section 601 (a) (1) (B) has terminated this Commission's NGA jurisdiction, and (2) section 504 of the NGPA which requires that gas dedicated to interstate commerce and for which just and reasonable rates under the NGA were in effect on the day before the NGPA was enacted be sold at prices no higher than NGPA section 104 prices.

2. Whether Komanche Oil & Gas, Stowers Oil & Gas, and J.B. Watkins have sold and are selling gas previously dedicated to interstate commerce and for which just and reasonable rates under the NGA were in effect on the day before the NGPA was enacted at

prices above that allowed under Section 504 of the NGPA.

#### IV. FACTS

The applicable statutory provisions are as follows:

NGA Section 7: (b) No natural gas company shall abandon all or any portion of its facilities subject to the jurisdiction of the Commission, or any service rendered by means of such facilities, without the permission and approval of the Commission first hand and obtained after due hearing, and a finding by the commission that the available supply of natural gas is depleted to the extent that the continuance of service is unwarranted, or that the present or future public convenience or necessity permit such abandonment.

NGPA Section 104: (a) APPLICATION.-- In the case of natural gas committed or dedicated to interstate commerce on the day before the date of the enactment of the Act and for which a just and reasonable rate under the Natural Gas Act was in effect on such date for the sale of such natural gas, the maximum lawful price computed under subsection (b) shall apply to any first sale of such natural gas delivered during any month.

NGPA Section 504: (a) GENERAL RULE. -  
-It shall be unlawful for any person--

- (1) to sell natural gas at a first sale price in excess of any applicable maximum lawful price under this Act; or
- (2) to otherwise violate any provision of this Act or any rule or order under this Act.

In 1935 the Texas Railroad Commission (Railroad Commission) announced that an area running in a southeasterly northwesterly direction, 124 miles long, averaging approximately 20 miles wide, containing 1,504,396 acres in Hartley, Moore, Hutchinson, Potter, Carson, Gray, and Wheeler Counties Texas, appeared to overlie the largest then known reserve of natural gas in the United States (Special Order Fixing Allowable Production of Sweet and Sour Natural Gas in the Panhandle District of Texas) (Exhibits 33 and 307, compare Tr. 402). The field, generally referred to as the Panhandle Field, lies on the buried Amarillo mountains, a remnant of the Wichita mountains which appear today at the earth's surface near Lawton, Oklahoma at an elevation of about 1,000 feet (Tr. 402, 422-423). Virgin pressure in wells drilled in the field was about 430-435 pounds per square inch gauge (psig) (Tr. 416-417). By 1984 the field had over 12,000 oil wells and about 4,500 gas wells and the reservoir pressure was 25 to 30 psig (Tr. 523-524, 1171).

As a general proposition, if oil and gas are present in porous rock, the oil will naturally accumulate in the lower portions of the formation. At a given depth, a flat formation will produce the same kind of hydrocarbon across the entire area under which the formation lies. Accordingly, where two wells are completed at the same depth intervals within a formation which has little or no structural relief, the two wells can be expected to produce the same kind of hydrocarbons (Exhibit 104 at 32).



Panhandle crude oil is a very dark green or green to brown, opaque liquid (Exhibit 92 at 8). It has as (American Petroleum Institute) API gravity of about 42 degrees, an average molecular weight of about 220, and an initial boiling point of about 130 degrees Fahrenheit (Exhibits 88 at 40-41 and 92 at 18, 20).

In the 1930's, the Railroad Commission established separate oil and gas fields in this geographic area. The oil fields carry a county designation, e.g. Panhandle (Carson) Oil Field and Panhandle (Gray) Oil field. Railroad Commission regulations provide 10 or 20-acre oil proration units in the Panhandle oil fields. The Railroad Commission designated the gas fields as the Panhandle West Gas field with 640 acre gas proration units and the panhandle East Gas Field with 160 acre gas proration units (Exhibits 307 at 6). While the proration unit of an oil well and a gas well can share the same surface area, the Railroad Commission established a division within the Wolfcamp Series (the dolomite, arkosic dolomite, limestone and granite wash formations) between the portion or the reservoir which was to be produced by oil wells, and the portion which was to be produced by gas wells (Exhibit 583 at 14; Exhibit 86).

The Railroad Commission has classified the Panhandle Field as a common reservoir, i.e. a pressure-connected unit (Tr. 1337-1339), and the portion of the reservoir from which the Dorchester wells produce only free gas as a non-associated has reservoir (Exhibit 264 at 50). Within the so-called "common reservoir" underlying the acreage which is the subject of this proceeding, there are distinct fields: the Panhandle West Gas Field, which consists of the portion of the reservoir lying above the gas-oil contact, and the Panhandle (Carson) and Panhandle (Gray) Oil Fields,

which consist of the portion of the reservoir lying below the gas-oil contact (Exhibit 583 at 14-19). The oil field beneath any given surface acreage within the Panhandle Field lies below the gas field (*ibid.* at 16).

The average depth of the producing formations in the Panhandle Field is about 2500 to 3000 feet (Tr. 415). Since 1933, the Railroad Commission has required all oil well operators in the state to determine the position of the gas-oil contact in each individual well bore and to perforate only below the gas-oil contact (Exhibit 583) at 14, Tr. 3420). Statewide Rule 13 (b) (4) (B) (Exhibit 531 at 2) provides:

(B) Isolation of Associated Gas Zones. The position of the gas-oil contact shall be determined by coring, electric log, or testing. The producing string shall be landed and cemented below the gas-oil contact, or set completely through and perforated in the oil-saturated portion of the reservoir below the gas-oil contact.

The Railroad Commission has also issued rules specifically for the Panhandle fields. On October 17, 1933, the Railroad Commission adopted Circular 16-B, a field rule, which in part covered the Panhandle area including the Panhandle West Gas Field, the Panhandle East Gas Field, and the Panhandle County Oil Fields. Circular 16-B, Division 2, Section II, Rule No. 3 provided that casings in gas wells in the Panhandle Field must be set and cemented not more than 25 feet above the part where the first show of gas is encountered in the lime formation (Exhibit 583 at 17) if said wells are to be produced from said formation. When wells are to be completed as oil wells at a depth below the lime gas, one string of casing must be set and cemented with sufficient cement to completely and



effectively seal off the gas formation from other formations; all casing must be cemented by the pump and plug method (ibid.). Rule No.3 means that all oil wells must have all their perforations only below the gas-oil contact point is determined by the operator in individual well bores, not by a general gas-oil contact for the entire reservoir (Exhibit 583 at 17, 19 and 21).

Dorchester has 35 gas wells located on the 21,284 acres in Carson and Gray Counties, Texas involved in this proceeding (sometimes referred to as the "subject acreage"). These Dorchester wells, drilled between 1934 and 1949, were almost all completed only in the brown dolomite portion of the geological formation (Exhibit 402 at 6-7; Tr. 284-86). The single exception appears to be Dorchester's No. 1 Warren which is perforated in the granite wash (Tr. 587-88; Exhibit 43). Since Dorchester acquired these wells in 1954 they have produced only hydrocarbons in the gaseous state (Exhibit 4 at 16-19). Dorchester sells the gas produced from these 35 wells to Northern Natural. As shown in the following table, in May 1984, production from 20 of these wells was committed or dedicated to interstate commerce on November 8, 1978 and as to which a just and reasonable price was in effect on that date, and production from 15 wells was priced at NGPA 108 levels applicable to stripper well gas (Exhibit 4 at 21).

**DORCHESTER GAS PRODUCING COMPANY**  
**PRORATION UNITS SUBJECT TO 2/15/84 SHOW CAUSE ORDER**  
**WELL COMPLETION DATES AND**  
**1983 PRODUCTION AND PRICING SUMMARY**  
**(Exhibit 5)**

<u>Well Name</u>	<u>Completion Date</u>	<u>Current NGPA Category</u>	<u>Production MMBTU</u>	<u>Gross Receipts Value*</u>	<u>Average Price Per MMBTU</u>
Beavers #1	2/17/45	108	5,872	\$ 21,598.75	\$3.68
Bednorz #1	6/09/34	108	8,078	29,479.98	3.65
Bell #1	12/29/37	108	13,452	39,830.04	2.96**
Bell #2	5/18/39	108	12,248	44,189.76	3.61
Bell #3	5/23/39	108	12,748	38,283.70	3.05**
Benedict #1	5/06/39	104 FG	23,321	10,771.96	.46
Bryan #1	12/01/36	104 FG	29,681	13,712.29	.46
Case #1	8/03/49	104 FG	78,635	36,395.69	.46
Chadwick #1	11/05/35	104 FG	22,073	10,235.12	.46
Cobb #1	4/21/36	108	15,190	55,220.49	3.64
Coffee #1	7/08/38	104 FG	67,582	31,222.17	.46
Durrett #1	9/30/38	104 FG	73,904	34,163.61	.46
Evans #1	8/23/39	108	36,858	133,100.56	3.61
Fields #1	3/31/36	104 FG	51,373	23,698.27	.46
Fields #2	12/15/36	104 FG	14,638	6,749.71	.46
Ginn #1	9/01/47	104 FG	29,424	13,644.11	.46
Haiduk #1	7/30/40	104 FG	43,790	20,232.37	.46

Kirney #1	6/03/48	104 FG	14,106	6,549.33	.46
Mathers #1	5/27/48	104 FG	32,551	15,054.09	.46
McBrayer #1	11/10/45	108	7,260	26,527.74	3.65
McConnell #4	8/27/34	108	6,588	24,060.34	3.65
Mongole #1	1/09/38	108	9,673	35,212.85	3.64
Osborne #2	8/23/49	108	16,270	59,623.01	3.66
Pickens #1	6/15/38	104 FG	33,521	15,509.31	.46
Pinnell #1	8/23/47	108	12,342	44,749.67	3.63
Pope #1	8/04/48	104 FG	28,088	13,097.54	.47
Sheridan #3	8/12/45	108	15,156	55,422.14	3.66
Vanderburg #1	8/18/47	108	8,138	29,577.72	3.63
Vaniman #1	9/11/39	104 FG	18,864	8,703.90	.46
Walker #1	8/28/39	104 FG	50,191	23,188.09	.46
Warren #1	8/13/38	104 FG	61,110	28,170.15	.46
White Deer Invest. #1	10/22/35	104 FG	28,036	12,938.70	.46
Wilson-Hart #1	5/20/38	108	10,908	39,945.87	3.62
Witter #1A	2/26/43	104 FG	39,033	18,030.02	.46
Witter #2	9/15/38	104 FG	63,202	29,223.17	.46
			<u>993,904</u>	<u>\$1,047,642.22</u>	

1983 Weighted Average Price per MMBTU = \$1.05

FOOTNOTE:

\* Excludes tax reimbursement value.

\*\* Both the Bell #1 and Bell #3 qualified for NGPA Sec. 108 effective February 17, 1983.

The Dorchester Chadwick No. 1 was completed for a time in both the brown dolomite and granite wash in 1935 and 1936 before it was plugged back and access to the granite was eliminated (Exhibit 4 at 19). Dorchester had a well about a mile outside the area covered by the Show Cause Order (Bobbit No. 1) which produced so much oil that it was reclassified as an oil well. Bednorz No. 1 on the Show Cause acreage and the Thompson well outside the subject acreage have had oil in the well bore (Tr. 292 1200-1233). Dorchester has at least one well on which it holds a Section 103 determination. Kinney No. 2 completed in 1981 was found to be necessary for effective and efficient drainage of the reservoir (Exhibit 4 at 14).

Dorchester's wells are all open-hole completions, i.e., the casing (a steel pipe 5"-8" in diameter) is set (or cemented in the well bore) above the stratum expected to be productive of hydrocarbons, and the portion of the well bore below the casing is exposed to the producing formation (Exhibit 104 at 25). For open hole completions, the completion interval is that portion of the hole at which depths the rock formation is exposed.

Respondents operate 196 wells on proration units which occupy the same surface area as the proration units assigned to Dorchester's 35 gas wells, i.e. the acreage subject to Cause Order (Exhibit 4 at 11). The Railroad Commission, based on information submitted by respondents, has classified all of respondents' wells as oil wells. Almost all of these wells were completed after November 9, 1987, the effective date for the NGPA. NGPA Section 103 allows prices for gas from "new onshore production wells" and Section 109 allows ceiling prices for new natural gas that does not fit into a designated category. Prices under both sections are substantially above the Section 104 price which covers gas committed or dedicated to interstate

commerce before the NGPA was enacted. Respondents sell almost all the gas from the wells named in the Show Cause Order to either Cabot Pipeline Corporation (Cabot), Getty Oil Company (Getty), Kerr McGee, or Northern Natural at Section 103 or Section 109 prices (See Staff's Initial Brief at 28, n. 15). The Railroad Commission has affirmatively determined respondent's well categories, and those determinations have become administratively final, 18 CFR § 275.202. According to Enforcement Staff and Dorchester, respondents are collecting Section 103 prices for all wells except ten wells for which they are collecting Section 109 prices (Enforcement Staff and Dorchester Initial Brief at 211-212).

Most of respondents' wells are perforated in the brown dolomite and the granite wash in a portion of the field where the brown dolomite lies in a high structural position, i.e. on top of the granite ridge that underlies the field (TR. 602). In most cases respondents' W-2 forms filed with the Railroad Commission do not show the perforations in the brown dolomite made after the initial completion in the granite wash. Most of the information about respondents' brown dolomite perforations was secured by discovery, in other litigation, or by stipulation in this proceeding. Meyer Farms testified its wells were completed only in the granite wash (Exhibit 476). Enforcement Staff and Dorchester's evidence would indicate that at least some of Meyer Farms Wells are perforated in the brown dolomite and above the gas-oil contact (Exhibit 104 at 233-240). The Producer Group named those respondents and their wells which they contend are not perforated in the brown dolomite (Exhibit 1A, attached as Appendix B to this decision). Enforcement Staff and Dorchester do not agree as to Komanche Oil & Gas Cobb No. 3 and 4, and they assert that the Wy-Vel Corp. Coffee No. 1 and Hodges No. 2

are perforated close to the bottom of the brown dolomite and fracturing has caused these wells to produce from the brown dolomite (Exhibit 104 at 54-55 and 118-119). A comparison of Appendix A and Appendix B shows that each respondent except Meyer Farms has at least one well perforated in the brown dolomite.

When a well is perforated, the completion interval or producing interval is that portion of the hole at which depths the perforations begin and end (Exhibit 104 at 28). Where the brown dolomite lies at the same depth continuously, the producing intervals of respondents' wells which are open in the brown dolomite overlap the producing intervals of the Dorchester wells since the latter are open from beneath where the casing is set down to the total well depth or plugged-back depth. An overlap may not occur where the wells are open in an area of the brown dolomite which shows very substantial structural relief.

Twenty-eight respondents (see Appendix C and Exhibit 582) operate gas processing units on their leases. These units operate at low temperature and extract liquids from natural gases (TR. 968). The result is a clear, water-white liquid which respondents call Panhandle light crude oil (Tr. 955, 958). Respondents count these liquids as oil in making the calculations and thus reduce their gas-oil ratios.

Well operators have traditionally had to apply to the Railroad Commission for a well classification. This requirement continues under the NGPA regulations, 18 CFR § 274.501. Wells are classified based on the phase behavior of the well's effluent at current reservoir conditions immediately outside the well bore in the formation, i.e. the gas-oil ratio at the "bottom of the hole" (Exhibit 583 at 35; Exhibit 92 at 4-5). This well



classification test is what is known as a recombined sample analysis. In the absence of a recombined sample analysis the Railroad Commission for many years has utilized what has been referred to as a "rule of thumb." If a well is submitted to the Commission with an American Society for Testing Materials (ASTM) distillation showing that the well produces a liquid hydrocarbon of 49-1/2 degrees API gravity or greater, with a surface ratio of 13,500 cubic feet of gas to one barrel of liquid hydrocarbon or greater and an initial boiling point of less than 120 degrees Fahrenheit, with 80 percent of that liquid vaporized at less than 520 degrees Fahrenheit and an end point less than 720 degrees Fahrenheit, with no evidence of cracking and at least 95 percent recovery, then the Commission will accept that well as a gas well in the absence of a protest. The reason for this rule of thumb is that a well with those characteristics at the surface would have a 100,000 to one gas-oil ratio or greater in the reservoir (Exhibit 583 at 39-40). For classification purposes, the volumes designated oil must be a hydrocarbon that is liquid in the reservoir, a liquid in the well bore, and a liquid at the surface (Exhibit 583 at 42). The process of classifying a well as an oil or gas well depends largely on the data the applicant submits. If the production results submitted to the Commission show a ratio of 100,000 cubic feet of gas or less to one barrel of oil, not to exceed 500,000 cubic feet of gas per day then the well in the Panhandle Field is classified as an oil well (Exhibit 402 at 10).

For the purposes of fixing "allowables," i.e. the volume of production permitted, the Railroad Commission classifies the Panhandle West Gas Field as a non-associated gas reservoir, even though the free gas phase overlies and is in contact with a black oil zone so that by accepted definitions it is an associated reservoir (Tr. 1138-1140, 3396).

The chronology of Dorchester's acquisition of leasehold rights, Northern's acquisition of gas purchase rights, and respondent's acquisition of oil rights is as follows:

1. Commencing in the mid 1920s, Lawrence Hagy, Donald Harrington and Stanley Marsh, an equal partnership, acquired approximately 49,000 acres of leasehold rights to oil and gas in Carson and Gray Counties, Texas. In the 1930s when the Railroad Commission initiated a 640-acre spacing requirement for gas wells the partnership had to consolidate its leases so as to satisfy the rules and its lease requirements. (Tr. 2740-2742). Most of the partnership gas wells were completed in the brown dolomite formation and produced dry gas (Exhibit 402 at 2-14; Tr. 2745).

2. Prior to 1937 the partnership could not sell its gas so it built the Cargray plant where it extracted natural gasoline and then vented the remaining gas (Tr. 2742-43). In 1937, Hagy, Harrington and Marsh contracted with Northern Natural to sell its natural gas from wells on this acreage. The parties entered a replacement contract in 1947. Eight of Dorchester's gas wells are on the land covered by the 1937 contract and 27 of its wells are on the land covered by the 1947 replacement contract (Exhibit 4 at 6). In the late 1940s, Panoma Corporation (Panoma) organized by Donald Harrington acquired the leasehold rights held by the Hagy, Harrington and Marsh partnership. Panoma held record title to the oil rights for convenience, beneficial ownership stayed with the partners (Exhibit 402 at 14; Tr. 2745). The assignment by Lawrence Hagy to Panoma signed October 1, 1949 specifies the assignment of all the assignor's rights, title and interest in specified oil, gas and mineral leases and leasehold estates but retains in the assignor an



overriding royalty on all gas produced and marketed from the assigned properties (Exhibit 406). Or October 1, 1949, Northern Natural's gas purchase contract was amended to substitute Panoma Corporation as seller and to add acreage so that on this date gas from all the acreage which is the subject of this proceeding was contractually committed to Northern Natural (Exhibit 4 at 6).

3. In a letter dated October 10, 1949, Panoma agreed that for convenience record title to oil rights under the oil and gas leasehold conveyed to Panoma shall remain in Panoma but that Lawrence R. Hagy was beneficial owner of an undivided one-third interest in and to the oil and oil rights under the leaseholds conveyed to Panoma by the assignments of October 1, 1949 (Exhibit 407). This letter was not recorded. Panoma assigned the oil and oil rights down to sea level to Lawrence R. Hagy in 1953 (Exhibit 407 at 14; Exhibits 407, 408, 409 and 410).

4. In approximately 1949 Don Harrington and Lawrence Hagy sold seven oil wells they had drilled in Sections 184 and 207, Block B-2 H&GN Ry Co. Survey, Gray County, Texas along with other underdeveloped oil acreage to Service Drilling Company (Exhibit 402 at 7). Prior to drilling these oil wells, Hagy, Harrington and Marsh had drilled a gas well on each of these two sections (Exhibit 402 at 8). Service Drilling drilled more oil wells on this land.

5. On July 1, 1952, Panoma and Northern Natural entered into a replacement contract which added more acreage in Carson and Gray Counties for a total of 49,944 acres (Exhibit 6). An amendment to the contract made February 12, 1954 did not affect the terms of the 1952 contract as it relates to the subject acreage (Exhibit 4 at 7).

The 1952 gas purchase contract between Panoma and Northern Natural contained the following provisions (Exhibit 6):

## **ARTICLE I**

### ***GAS TO BE DELIVERED AND PURCHASED***

*Section 1. Gas to be Delivered and Purchased.* Subject to the terms and conditions of this contract, Seller agrees to sell and deliver to Northern hereunder, and Northern agrees to purchase and receive from Seller all of the natural gas produced from the wells now drilled and hereafter to be drilled on the acreage described in Exhibits 'A' and 'B', or on acreage substituted therefor or added thereto, as herein provided.

## **ARTICLE IX**

### **DEDICATION OF GAS RIGHTS AND WELLS**

Subject to Seller's reservation of the natural gasoline and other liquefiable hydrocarbons to the extent set forth in Section 1 of Article VII, Seller agrees that all of its gas rights in the gas lands and leases covering the acreage in the White Deer and Alanreed Areas, or acreage substituted therefor, or added thereto together with all wells now drilled and hereafter to be drilled on such acreage, which are productive of gas in commercial quantities, are hereby exclusively dedicated and devoted to the fulfillment and performance of this agreement ....

The contract contains no depth limitations, no exclusion of particular formations, no restrictions as to any particular type of natural gas, and no restriction as to natural gas from any particular type of well (Exhibit 4 at 9).

Appendix C of the Initial Brief of the Producer Group (represented most of the respondents) lists certain wells located on oil and oil right leaseholds on the subject acreage which it claims Panoma never held.

6. On June 7, 1954, the Commission began regulating natural gas sales in interstate commerce for resale by independent producers (*Phillips Petroleum Co. v. Wisconsin*, 347 U.S. 672 (1954)). On this date Panoma was selling Northern Natural gas from 93 wells located on the 49,944 acres dedicated to Northern Natural by the 1952 contract as amended, including gas from 35 wells on the subject 21,284 acres (Exhibit 4 at 10). Neither Hagy, Harrington and Marsh nor Panoma sold Northern Natural any casinghead gas from this acreage on or prior to June 7, 1954 (Exhibit 402 at 17).

7. On July 1, 1954, Panoma was dissolved and its shareholders (D.D. Harrington, *et al.*) received the assets and transferred to Nalam Corporation "the gas and mineral (other than oil) in and that may be produced from, the producing horizons which are situated in whole or in part above sea level. ..." (Exhibit 10 at 60).

8. By instruments dated July 1, 1954, D.D. Harrington, *et al.* conveyed to Nalam Corporation (Nalam) which simultaneously conveyed to Dorchester the following (Exhibit 7):

## **PART II OF EXHIBIT A**

### **CARSON & GRAY COUNTIES, TEXAS -- GAS LEASEHOLDS**

The leasehold estates created by or existing under and by virtue of those certain oil, gas and mineral leases hereinafter described covering lands in Carson and Gray Counties, Texas hereinafter described, insofar as said leasehold estates cover the gas and mineral (other than oil) leasehold rights in, and the title to gas and other minerals (other than oil) in and that may be produced from, the producing horizons which are situated in whole or in part above sea level; but subject however to the exceptions, limitations and burdens hereinafter specified and to the express exception of all rights, titles and interests in and to said leasehold insofar as said leasehold estates relate to oil or oil rights.

The Nalam conveyance to Dorchester stated (Exhibit 11 at 61):

Further, said leasehold estates are subject to the terms and provisions of (a) that certain Natural Gas Purchase Contract dated July 1, 1952, between Northern Natural Gas Company, as Buyer, and Panoma Corporation, as Seller, as amended by Amendatory Agreement dated February 12, 1954.

9. Between 1954 and 1984, the shareholder of Panoma (D.D. Harrington, *et al.*) and Lawrence Hagy consolidated their interests in oil and oil rights above

and below sea level. Since 1979 Hagy, Sybil Harrington and the Harrington Foundation entered into farmout agreements and assignments with most of the respondents (Exhibits 411-419). These farmout agreements typically provide (Exhibit 17 at 4):

4. *Exclusions.* It is expressly provided that this Farmout Agreement does not cover or apply to dry gas rights and under the lands described on Exhibit "A" and that Farmees shall set and cement the casing in all wells drilled hereunder in such a manner as to prevent gas well gas from entering the oil zones. In no event shall any dry gas produced from gas zones be produced with the oil or casinghead gas produced by Farmees.

10. Respondents then contracted to sell their gas to Cabot, Getty, Kerr McGee and Northern Natural.

Dorchester applied to the Federal Power Commission for a certificate of public convenience and necessity in November 1954 for the sale of gas to Northern Natural under the 1952 contract (Exhibit 12). The contract was an exhibit to the application (Exhibit 519 at 6). On February 6, 1956, the Commission in Docket No. G-5925 issued Dorchester a certificate pursuant to Section 7 of the Natural Gas Act authorizing it to sell natural gas from the Panhandle Field, Carson and Gray Counties, Texas to Northern Natural (Exhibit 13). The certificate referred to the application and did not describe the gas dedicated by Dorchester.

As noted above Dorchester has a leasehold interest in the 49,944 acres from which Panoma committed gas sales to Northern in 1952. The show



cause order covers only part of the acreage. It defines as the subject acreage the 21,444 acres comprising 35 Dorchester proration units. See Exhibit 4 at 12-16 for an explanation of how this acreage was reduced to 21,284 acres.

Within the Panhandle Field the geological formations in order of appearance from the top are base massive anhydrite, brown dolomite, arkosic shale, arkosic dolomite/limestone, granite wash, jackson member and granite basement (Exhibit 74). Hydrocarbons in the gaseous or vapor state are usually found in the brown dolomite, a carbonite type of rock, which extends over the entire Panhandle Field without any significant break in continuity (Exhibit 73 at 9; Tr. 407). It is possible in a single field for the brown dolomite, depending on where it is located structurally, to be productive (low lying) or non-productive (high lying) of hydrocarbons that are in liquid form in the reservoir, in the well bore and at the surface, i.e. crude oil (Exhibit 264 at 33; Tr. 694-695). Production of just gas from the brown dolomite would indicate that the production source was above the gas-oil contact (Tr. 558). Structural areas that would be productive of gas or oil in the field (Tr. 683). In the area immediately to the northeast of the subject acreage, a traditional oil producing area, the brown dolomite dips considerably and lies 300 to 750 feet below its typical position under the Dorchester acreage (Exhibit 264 at 3-10).

Exhibit 75 shows that northeast of the subject acreage, in an area known locally as the "South Pampa" oil field, the top of the brown dolomite appears 750 feet lower than the top of the brown dolomite in the Dorchester Bell No. 1 well (Exhibit 264 at 4). Similarly there is a structural dip of about 320 feet running west to east from the Harlow Beavers No. 3 well to the Texaco Jackson No. 14 well (Exhibits 73 at 6, 74). The

entire field, not just the subject acreage, dips off on either side with much more structural relief than is found in the subject area (Tr. 695).

A 1935 article about the field's geology noted that (Exhibit 405):

The dolomite is the most consistent producing formation in the Panhandle, producing gas over almost all of the higher part of the structure and oil on the north flank. It is usually referred to as the "Big Gas" horizon.

\* \* \*

The granite wash ... produces gas on the higher parts of the structure and both gas and oil on the flanks. As a producing zone it is very erratic, but under favorable conditions is extremely prolific.

\* \* \*

Gas is found in all of the producing formations where present on the higher parts of the regional structure, oil being present on the north flank and maintaining a general level between sea level and 200 feet above.

The Texas Natural Resources Code defines casinghead gas as "any gas or vapor indigenous to an oil stratum and produced from the stratum with oil," and the Railroad Commission has adopted this definition in its statewide rules. (Tex. Nat. Res. Code. Ann. § 86.002(10) (Vernon 1978)' Title 16, Texas Administrative Code, Section 3.69 Definitions, Railroad

Commission Rule 051.02.02.079). In various annual reports the Railroad Commission has talked about casinghead gas as gas produced from an oil well.

## V. ARGUMENT

Enforcement Staff and Dorchester view this case as revealing only the tip of the iceberg or a widespread practice where parties, under the guise of drilling new oil wells, transform old (relatively cheap) dedicated natural gas into new (high cost) undedicated gas. Dorchester, Enforcement Staff, and Northern Natural contend that the 34 respondents have and are appropriating natural gas that is "dedicated" to interstate commerce, and this appropriation is illegal because there has been no compliance with the abandonment provision of the Natural Gas Act. It is undisputed that Dorchester's reserves under discussion were, at the time Dorchester acquired them, already developed and producing, and were dedicated to interstate commerce. *Dorchester Gas Producing Co. v. FERC*, 571 F.2d 823 at 825 (5th Cir. 1978). The issue here is what was dedicated.

Dorchester and Enforcement Staff contend that all natural gas (including casinghead gas) underlying the 21,284 acres which is the subject of the Show Cause Order was dedicated to interstate commerce on June 7, 1954. Dorchester and Enforcement Staff reason that on this date when the Commission began regulating interstate gas sales for resale by independent producers, all gas under this land was "dedicated" to Northern Natural because the 1952 gas sales contract between Panoma and Northern Natural was in effect which covered all gas, citing the portions of Article I and Article IX quoted above, and Panoma was making gas deliveries to Northern Natural from this acreage (Exhibit 4 at 10). Enforcement Staff and Dorchester



note that Panoma's 1952 contract with Northern Natural occurred before Panoma's 1953 assignment of oil and oil rights to Lawrence Hagy.

Section 7 of the Natural Gas Act does not use the term dedication; however, the term is commonly used to describe the service obligation which attaches as a matter of law to natural gas which is sold in interstate commerce for resale. Enforcement Staff argues that a contract or certificate is not necessary to dedicate natural as to interstate commerce (Exhibit 603 at 7): "The commencement of deliveries of natural gas in interstate commerce is the act which, standing alone, dedicates natural gas from those properties and makes the natural gas subject to the Commission's authority." *Mountain Fuel Supply Co. and Wexpro Co.*, 24 FERC ¶ 61,120 at 61,293, rehearing denied, 24 FERC ¶ 61,321 (1983); see also *J. M. Huber Corp. v. FPC*, 236 F.2d 550, 556-558 (3rd Cir. 1956), cert. denied, 352 U.S. 971 (1957); *Tenneco Exploration, Ltd. v. FERC*, 649 F.2d 376, 379-380 (5th Cir. 1981). According to Dorchester and Enforcement Staff, because Northern Natural was purchasing gas from this acreage on June 7, 1954 under a contract which committed to the performance of that contract "all natural gas" produced from all present and future wells located on this acreage, all gas produced from the acreage, including casinghead gas, is dedicated to interstate commerce under the Natural Gas Act (Exhibit 603 at 13-14).

The parties aligned with Enforcement Staff and Dorchester maintain that the Commission has jurisdiction despite the fact that respondents hold incentive pricing determinations under Sections 103 and 109 of the NGPA because:

(Section 503(d) NGPA). These parties claim that the Railroad Commission after their applications were submitted, make additional completions in the brown dolomite above the gas-oil contact and that some respondents relied on refrigeration units to achieve the gas-oil ratios shown on their applications (Reply Brief of Indicated Intervenor, p. 7-8).

2. The Section 103 determinations apply only to respondents' gas production from below the gas-oil contact (true casinghead gas). This is because a "new onshore production well" (NGPA Section 103) cannot be within a proration unit which was in existence at the time the surface drilling of the new well began and which was applicable to the reservoir from which natural gas from such new well is produced. The NGPA defines a proration unit as any portion of a reservoir which will be effectively and efficiently drained by a single well (Section 2(8)). Enforcement Staff and Dorchester conclude that the common reservoir underlying the Panhandle West Gas Field fits the NGPA definition and the boundary of that portion effectively and efficiently drained by an oil well is defined by the gas-oil contact (Initial Brief at 212-215).

Colorado Interstate Gas Company is the only party which agrees with Staff and Dorchester that all gas underlying the land in question was dedicated to interstate commerce on June 7, 1954. Anadarko Production Company, Conoco, Inc., Mobil Producing Texas & New Mexico, Inc., Natural Gas Pipeline Company of America, Northern Natural, Pan Eastern Exploration Company, and Phillips Petroleum Company support Enforcement Staff and Dorchester's alternative position that respondents are violating federal laws because the 1952 contract dedicated to interstate commerce all gas except casinghead gas and respondents' production is not casinghead gas because

it is not gas that is indigenous to an oil stratum and produced from the stratum with oil. These parties contend that almost all the gas produced by respondents is from the brown dolomite formation which is not commercially productive of crude oil as encountered by respondents' wells. This contention is supported by testimony from employees or former employees of Conoco and Dorchester (Exhibits 289-291; Exhibits 4-24) but mainly by an in-dept study of the subject acreage by three consultants--a geologist, an expert in reservoir fluid analysis, and a petroleum reservoir engineer. These experts sponsored by Dorchester and Enforcement Staff gave testimony on 16 study area each containing one or more proration units for 35 Dorchester wells. The study areas were selected so as to include all wells with gas production which might affect production from the Dorchester gas well. The selection criteria for inclusion within a study area included a well's distance from the Dorchester well, its production characteristics, and its proximity to other Dorchester proration units. Adjacent oil wells with no discernible effect on Dorchester gas production were included within some study areas for comparison purposes (Tr. 20-21, 1468-1469, 1501-2). Some of the study areas included acreage which is not the subject of the show cause order (Exhibit 108 at 20; Exhibit 34; Tr. 1333).

The experts did the following:

1. The geologist, with the expert in reservoir engineering, prepared geologic structural cross sections for each study area, i.e. illustrations of the earth using a common datum point of 600 feet above sea level, displaying the wellbore holes of Dorchester's and respondents' wells in a view which is perpendicular to the surface of the ground, to show the wells' completion intervals and relative depth locations of the different

subsurface geologic formations (Exhibits 35-71); Tr. 458-459, 537, 1312-1313). This geologist studied well data sheets on Dorchester wells, and electric logs for respondents' wells, and made correlations between the well logs, determining formation tops and bases, and then determining the structural position of the brown dolomite marker and the granite wash marker (Exhibit 32 at 9-10; Tr. 454, 592). He concluded that from the standpoint of hydrocarbon production, there are two significant and distinct lithological formations encountered by the wells situated on the acreage which is the subject of this proceeding: the brown dolomite formation and the granite wash formation. The granite wash formation is deposited irregularly along the peaks and valleys of the buried granite ridge and exhibits great variation in rock composition both laterally and vertically (Exhibit 73 at 9). The shallower brown dolomite formation is comprised of porous rock material. This formation is of fairly uniform thickness as it underlies this acreage and extends over the entire Panhandle Field without any significant break in continuity. The brown dolomite formation is encountered in a relatively high structural position in all study areas except study areas 2, 11 and 12 where the brown dolomite formation experiences varying degrees of structural dip (Exhibit 32 at 51; Exhibit 73 at 11). Significant structural relief, a 300 foot drop, exists in study area 11 (Section 183 of Block B-2) (Tr. 682). The geologist has put the gas-oil contact in Section 94, Block B-2 H&GN Railroad Survey which is partially in Study Area 2, where the brown dolomite is the lowest of all the study areas, at a subsea depth of approximately 183 to 195 feet: the highest known oil was at 195 feet above sea level and lowest known gas was at 183 feet above sea level (Exhibit 73 at 7-9; Tr. 1262). This witness found that the gas-oil ratios for wells in the study areas perforated only below the gas-

oil contact were below 1,000 cubic feet of gas to one barrel of oil (Tr. 574).

2. The expert in reservoir fluid analysis tested 60 wells in September 1983 and April 1984 on 20 leases held by 12 respondents and Phillips Petroleum Company (Exhibit 88 at 6). Respondents did not voluntarily cooperate in many of the tests and they were done under court order (Tr. 919-920). The operators classify all these wells as oil wells. Eighteen of the leases had gas processing units, i.e. small on-lease facilities used to condense or manufacture natural gas liquids from a gas stream (Exhibit 88 at 5-6). The expert monitored natural gas and liquid production from each lease for approximately 48 hours. Measurements were taken periodically--of gas from the gas sales meter and for liquid from the on-lease stock tank. The ratio of surface gas to oil production was calculated from these data, adjusted to standard conditions of temperature and pressure and reported in standard cubic feet of gas per barrel of oil. Gas samples from the flowline (the pipeline that gathers production from all the wells on the lease) and stock-tank liquids and wellhead liquids were then taken and subjected to the following laboratory tests (Exhibit 88):

Liquids:

--ASTM D-86 distillation test where liquid is heated and vapor collected. This test determines the physical characteristics of the liquid (initial and end boiling points, percent distilled at any temperature).

--"fingerprint test" determines the relative quantities of various heavy (large number of carbon atoms) hydrocarbon components of the liquid which are not affected by weathering or handling techniques.

Gas and Liquids:



--hydrocarbon composition analyses which focus on light hydrocarbons. Used to determine the individual characteristics of hydrocarbons in a system.

--phase equilibrium tests were samples taken at the surface are recombined at reservoir pressure and temperature to determine the phase in which these samples existed in the reservoir, and whether the samples were in phase equilibrium when produced.

By the laws of physics, at higher pressure (in the reservoir) a certain amount of material in the gas phase will be driven into the liquid phase thus reducing the volume of gaseous material. The result is that if oil and gas are produced from the same porous rock the gas-oil ratio at the surface (at standard conditions) should be greater than the gas-oil ratio in the reservoir. If the gas-oil ratio at the surface is less than the gas-oil ratio in the reservoir, at reservoir conditions (22.4 psig and 99 degrees Fahrenheit) as recreated in the laboratory, then the gas and oil were not in phase equilibrium when produced and thus were not produced from the same porous rock (Exhibit 88 at 16-17, 33). The following test results are for the 18 tested leases that have gas processing units (Exhibit 88 at 61-62):

## SUMMARY OF PHASE EQUILIBRIUM TESTS

Lease	Surface Recombination GOR	Reservoir GOR
Almac Big Bull	42,012	95,300
Aspen Chadwick	62,741	1,832,044
Aspen Jones	56,494	683,577
Aspen Warnick	60,498	901,424
Dahalo Vanderburg	61,464	442,543
3-W Tieman	71,323	520,661
Vanderburg Expl.Sandy	36,594	251,454
Vanderburg Prod.		
Vanderburg	49,573	541,996
Wy-Vel Dennis	68,480	1,705,154
Energy-Agri Henry	66,092	1,764,669
Energy-Agri Money	37,155	347,768
Energy-Agri Peeler	43,185	867,017
Magnet Dania	37,607	597,955
Raven Martha	68,516	842,751
Tri-Ex Culbertson	81,755	1,602,407
Tri-Ex Hayes Trust	60,292	783,798
Tumble Weed Haiduk	77,127	879,246
Wy-Vel Coffee	32,038	687,227

By Contrast the results for the two leases without gas processing units are as follows (Exhibit 90 at 11 and 18):

Lease	Surface Recombination GOR	Reservoir GOR
Raven Energy Jeanne	22,642	26,362
*Phillips Thornburg No. 1	202	159

\* Not a respondent well but located on Dorchester's Pickens No. 1 proration unit on which four respondent wells are situated.

The expert in reservoir fluid analysis concluded:

For every lease tested, the reservoir gas-oil ratios of the recombined samples were significantly higher than the produced gas-oil ratios measured at the surface during the test period. ... [W]hen the recombined samples were subjected to the increased pressure encountered in the reservoir, the volume of gas, and thus the gas-oil ratio of these recombined samples, should have been lower than that measured at the surface if the gas and liquid samples were in phase equilibrium. As shown on the above chart, it is clear that for all the leases tested, the reservoir gas-oil ratios of the recombined samples were extraordinarily high compared to the produced gas-oil ratios.

Based on the level of the gas-oil ratios, it is my conclusion that an insignificant amount of oil was produced from any lease. The product in the stock tanks was principally the liquid condensed or manufactured by the on-lease gas processing units.

From these results--the trends of data from the ASTM distillation tests and the hydrocarbon analyses of all samples--it is my opinion that the gas produced from these leases was not in phase equilibrium with the oil, if any, produced from these leases. Therefore, the oil and gas were not produced together from the same porous rock.



3. The third expert, who specializes in petroleum reservoir engineering, used the efforts of the other two in his analysis. He sponsored phase diagrams on the production of numerous Panhandle field wells. A phase diagram is a graph showing whether a sample mixture of hydrocarbons exists as a liquid, a gas, or as two phases in equilibrium, at any specified condition-of temperature and pressure (Exhibit 104 at 7-13). The third expert used samples gathered by the second expert. In each case except the Raven Jeanne and Phillips Thornburg leases (Exhibit 109 at 5) these were gas samples taken before the gas enters the gas processing unit, not recombined gas oil samples (Tr. 1165-1168). For each diagram, the dew point and bubble point for the particular sample was plotted against temperature and pressure and then compared with current estimated reservoir pressure and temperature conditions (25 to 30 psig and 90 to 105 degrees Fahrenheit): if reservoir conditions appear on the diagram between the dew point line and the bubble point line, the conditions appear to the right of the dew point line it is a gas; and if reservoir conditions appear to the left of the bubble point line it is a liquid. The expert determine the dew point and bubble point values using the hydrocarbon compositional analyses of the particular well samples and a general formula (modified Soave-Redlich-Kwong equation of state) (Exhibit 104 at 10; see description at Tr. 1171-1173).

The phase diagrams show:

Five diagrams from samples from four Dorchester wells (Osborne No. 2, Pinnell No. 1, Williams No. 1 and Jendrusch No. 1)-production in gas phase in the reservoir and at the surface (Exhibit 104 at 12-13, Exhibit 105).

J.B. Watkins Bell No. 1--phase behavior of the gas similar to phase behavior of Dorchester's gas wells therefore production was not in phase equilibrium in the reservoir. If liquid hydrocarbons were in phase equilibrium in the reservoir, phase diagram would resemble that of Phillips Thornburg No. 1 (Exhibit 109). Sample used for this diagram was not taken by the second expert like the others, it was a sample taken in August 1978 which J.B. Watkins transmitted to Phillips, who transmitted it to Northern Natural, who transmitted it to Enforcement Staff (Exhibits 104 at 13-14; 106 and Tr. 1421-1432).

18 respondent wells (Exhibit 104 at 14-15; Exhibits 107 and 108)-- production at inlet of gas processing units was gas in the reservoir.

Raven Jeanne lease and Phillips Petroleum Thornburg No. 1 well--two gas samples from each lease indicate material was gas in the reservoir and at the surface. Recombined flowline (wellhead) sample and stock tank sample shows the two materials were in equilibrium, but the shape of phase diagrams indicates that the Thornburg No. 1 to be typical of a crude oil well with significant liquid volumes at reservoir conditions, and the Jeanne lease has mostly gas and little liquid indicating that the gas and liquid phase were not in equilibrium in the reservoir, i.e., did not flow together from same porous rock. (Exhibit 104 at 15-17; Exhibit 109; Tr. 1173-1176)

The expert concluded that the phase diagram for the Jeanne lease would be representative of the respondent lease situated in a structurally high area of the brown dolomite formation with wells completed in the brown dolomite and granite wash formations, which has a high gas-oil ratio and no gas processing unit. Based on the "virtually identical" phase diagram for Dorchester's five wells and respondents' 18 wells, the expert believes that gas produced from leases with a gas processing unit is not in phase equilibrium with any crude oil produced from the lease (Exhibit 104 at 19-20).

The second part of the third expert's presentation showed by study area:

1. A graph of each Dorchester well's shut-in pressure plotted against its cumulative gas production from 1966 through April 1984 and a description of any shifts in the trend of the curve (Tr. 1501).

2. Completion intervals of all respondents' wells and Dorchester wells.

3. Production information including gas-oil ratios for respondents' leases.

This evidence is summarized in Appendix C.

This expert's analysis caused him to opine as follows about the gas from wells in the study areas (Exhibit 104 at 275-276):

...I conclude that almost all of the gas produced by respondent wells situated on the surface acreage of proration units assigned to Dorchester gas wells is not casinghead gas. It is not casinghead gas

because it is not produced with oil from an oil-bearing formation. Rather, the gas has been and is being produced from the gas-bearing formation underlying Dorchester's acreage, in which formation the vast majority [of] respondents' wells have been perforated at the level of the Dorchester's producing interval. Accordingly, I conclude that the gas produced by respondent oil wells is the same gas that otherwise would be produced by Dorchester gas wells from the same formation from which the Dorchester gas wells have been effectively and efficiently draining gas for nearly 40 years.

The expert based his conclusion that respondents' gas production is being produced from the gas-bearing portion of the brown dolomite on Dorchester's production records, the geological evidence, the phase behavior information, the well completion records, as well as the completion and production records of other wells in the study areas (Tr. 1093).

The Stowers Oil and Gas Company, *et al.*, (the Producer Group) representing all respondents except Meyer Farms and J.B. Watkins, argues that Dorchester and Enforcement Staff have not proven their case either on the law or on the facts. The Producer Group sponsored testimony from numerous respondents and several experts. Much of this testimony entered the record without any requests for cross-examination (Exhibits 533 through 547 and 549 through 580). Respondents stressed that the Railroad Commission's District Supervisor assigned to the Panhandle Field told them it was permissible to complete an oil well from the top of the brown dolomite to the base of the

granite wash provided the resulting gas-oil ratio was less than 100,000 cubic feet of gas to one barrel of oil (Tr. 311-313). Many respondents recalled seeing oil shows in rock samples or cuttings and either seeing or hearing about oil production from the brown dolomite in the West Panhandle Field. The experts (Exhibits 314-345, 352-366, 402-403, 466-471, 473-475, 519, 520-527) opined that Panoma's assignments in 1953 of oil and oil rights to a party other than the owner of the gas rights suggests that the term "gas rights" in the 1952 contract did not include the production of casinghead gas, and that respondents' production was true casinghead gas because oil and gas are spread throughout all the formations due to oil vaporization and other reasons. To demonstrate that vaporization has occurred, the Producer Group's expert calculated the behavior of the vapor specific gravities as they would change in response to pressure reduction in reservoir using the amount of gas and oil produced from each tract, the history of pressure decline of the reservoir in the tract, the specific gravity of the produced gas, and an estimate of the composition of the oil and gas phases as they existed under the tract before production began. The expert found that as the reservoir pressure declines, oil in the reservoir is vaporized into gas, and the specific gravity of the augmented gas increases. The expert concluded that gas produced on the Dorchester leases contains significant amounts of vaporized crude oil components (Exhibit 352 at 23).

The Producer Group's position may be summarized in two parts:

Part One: a) Because the NGA does not apply "...to the production or gathering of natural gas" (Section 1(b)) the Commission has no NGA jurisdiction over the acts and practices asserted in the Show Cause



Order. That is, the Commission has no jurisdiction to decide, determine or regulate matters involving the physical activities, properties and facilities of the production of natural gas.

b) Further, the Producer Group alleges that any NGA jurisdiction the Commission may have had over the acts and practices of respondents has been removed by operation of Section 601(a)(1)(B) of the NGPA: Once respondents obtained final Section 103 well category determinations under the NGPA abandonment permission was thereby obviated.

c) The Producer Group contends this Commission should not decide issues that involve the interpretation and construction of the Texas Natural Resources Code and the interpretation and application of the rules and regulations of the Railroad Commission; instead the Commission should defer to the State of Texas, its courts and the state regulatory agency having the jurisdiction and competence to make those determinations. Alternatively, this Commission should invoke the provisions of Section 17 of the NGA and convene a joint board with the State of Texas to decide these material Texas law questions.

Part Two: a) Even assuming the Commission has jurisdiction, the Producer Group argues that the overwhelming weight and preponderance of the credible evidence establish that the brown dolomite formation produces oil and not only gas.

b) Since all of respondents' wells have been properly and finally classified as oil wells, it follows from Railroad Commission regulations that all gas production from these wells is casinghead gas and none of it is "dry gas". Accordingly, respondents are not as alleged in the Show Cause Order, engaged in an



unlawful diversion of "dry gas" dedicated to interstate commerce nor are respondents producing and selling "dry gas" subject to a maximum lawful price under Section 104 of the NGPA.

The Producer Group's position is that all gas produced from any oil well is casinghead gas, and that attempts by Enforcement Staff and Dorchester to refine or alter this definition fall outside all Texas statutes and Texas regulatory classification (Tex. Nat. Res. Code Ann. § 86.002(5) (Vernon 1978)). The Producer Group argues that the Railroad Commission has recognized and relied on a 1940 Texas Attorney General's Opinion that states (Exhibit 326 at 4):

In view of the above considerations, we conclude that the term 'casinghead gas' applies to all gas produced from any 'oil well' as defined in Subsection (e), Section 2, Article 6008,...

The Producer Group contends it is clear from this, that casinghead gas is all gas produced from any oil well.

The Producer Group maintains that the Texas courts construe the term stratum to be synonymous with reservoir. *Bens-Stoddard v. Aluminum Company of America*, 368 S.W. 2d 94 (Tex. 1963); *Railroad Commission v. Shell Oil Company*, 380 S.W. 2d 556 (Tex. 1964); and *Bolton v. Coats*, 533 S.W.2d 914 (Tex. 1975). Thus, all gas produced with oil from the common reservoir is produced from the same stratum as the oil. Moreover, the definition of an oil well under Texas law is simply a well that produces one barrel or more of oil to each 100,000 cubic feet of gas (Tex. Nat. Res. Code Ann. 86002(5) (Vernon 1978)). The Producer Group notes that this definition says nothing about the gas/oil

contact, but clearly implies that such an oil well can produce from the gas cap area above the oil (Item-by-Reference M, Legislative History of Texas, House Bill 266, Sections 2(d) and 2(e)). The Producer Group points out that the expert on Railroad Commission regulation sponsored by Dorchester and Enforcement Staff agreed it would be impossible for an oil well to produce only so-called "true" casinghead gas at gas-oil ratios of up to 100,000 cubic feet per barrel (Exhibit 596 and 597; Tr. 3596-97); thus gas cap gas produced by an oil well is properly considered casinghead gas. In support of its position, the Producer Group cites that expert's opinion that he would consider one of the J. B. Watkins wells producing at a gas-oil ratio of 94,444 to 1 an oil well and the gas it produced as casinghead gas (Tr. 3662) even though the gas was gas cap gas caused by the gas cap moving down in the well bore (Tr. 3660-61).

Turning to Enforcement Staff and Dorchester's argument that gas is not casinghead gas unless it is produced from a properly completed oil well, i.e. below the gas-oil contact, the Producer Group contends that the Texas statute and Railroad Commission rules and regulations contain no such requirement, and the only basis for the position of Enforcement Staff Dorchester is the opinion of the state regulatory expert who did not say gas produced from such a well was not casinghead gas, but only that he did not believe that a well perforated above and below the gas-oil contact (though they argue that there is no gas-oil contact requirement) and produces at a ratio of less than 100,000 cubic feet of gas per barrel of oil, that well is clearly an oil well as defined in both the Texas statute and Railroad Commission rules. The Producer Group ridicules the theory of Enforcement Staff and Dorchester as creating, in this situation, a new well category of illegal wells. The Producer Group argues that under the Texas regulatory scheme, a well must

be classified an oil well or a gas well regardless of the manner in which it is completed and operated. The Producer Group notes that, contrary to Enforcement Staff and Dorchester's position, the regulatory expert agreed that the Railroad Commission's annual reports are based on the state attorney general's construction of the Texas statute (Tr. 3547-3550; Exhibit 326). The Producer Group takes Enforcement Staff and Dorchester's position to mean that the Railroad Commission has carried on an unlawful gas classification system since 1952, blatantly publishing such unlawful practices every year to both the Governor and the people of Texas.

The Producer Group dismisses comments about respondents' use of gas processing or liquid extraction units as a strawman because the Show Cause Order makes no mention of such units, and "the propriety of the use of refrigeration units is not an issue (Enforcement Staff and Dorchester, Initial Brief at 206). It notes there is no evidence that any well or any lease utilized a refrigeration unit or counted liquids extracted by such unit in conjunction with the initial well classification test required by the Railroad Commission, and concludes that since the wells were classified as oil wells, there can be no issue involving the use of refrigeration units.

The Producer Group contends that Enforcement Staff and Dorchester have nowhere proven that gas must be "true casinghead gas" to receive NGPA Section 103 prices, nor have they shown anything to support this position in the legislative history of the NGPA or Commission rules and regulations. Finally, the Producer Group points out that the Commission has continued to approve Section 103 determinations after the date of its Show Cause Order in response to

applications where the applicant has identified up-hole brown dolomite perforations.

Respondent Lucky Bird Petroleum, Inc. (Lucky Bird) filed a supplement to the initial brief of the Producer Group. Lucky Bird supports the Producer Group's position that the Commission has no jurisdiction to make findings of the allegations set forth in the Show Cause Order. Lucky Bird further argues that the dispute between Enforcement Staff and Dorchester and the Producer Group regarding the definition of casinghead gas does not affect Lucky Bird because the lease assignment it holds, which originally was given by Stanley Marsh of Hagy, Harrington and Marsh, states: "It is understood that casinghead gas produced from an oil-bearing strata shall be considered as oil." (Exhibits 392 and 393). Lucky Bird's evidence is that in three of its four wells named in this proceeding the drill samples from the depth at which it is producing gas also contained free oil (Tr. 2661-2662). Lucky Bird argues that this means that the gas it produces comes from an oil-bearing stratum.

Lucky Bird contends that its wells have no appreciable effect on Dorchester' Pickens well, located on the same section (640 acres) as the Lucky Bird-Thornburg lease, because the pressure versus cumulative production curve of the Dorchester well shows a straight line decline which is typical of the entire field after initial production decline has settled down. Lucky Bird concludes that the pressure in the Dorchester Pickens No. 1 well is affected only by production in that well, since its production increased substantially after it was fractured, which Lucky Bird claims led to the dramatic pressure drop. Lucky Bird alleges that its wells are in a geological trough, down structure from the Pickens No. 1 well (Tr. 2663-64). Lucky bird concludes that its gas production would not



otherwise be produced at all (Lucky Bird Brief at 6). Lucky Bird notes that it has made full disclosure of all of its perforations (Tr. 2655) and it contends that, based upon Enforcement Staff's own expert witness' testimony, pressure in the Dorchester Pickens well dropped less from 1981-1984 (when the Lucky Bird wells were completed) than for the 1966-1979 period (Exhibit 309); that Lucky Bird's wells make their gas-oil ratio unassisted by refrigeration units (Tr. 2701); that the Lucky Bird lease has historically had good oil production (Exhibit 390 at 25); and that a continuing increase in the Btu content of Lucky Bird's gas may only be explained by the gas being in contact with oil in the reservoir (Exhibit 390 at 20).

Respondent Meyer Farms, Inc. (Meyer Farms), owner of Coffee wells Numbers 1,2 and 3, maintains that its wells were completed and perforated solely in the granite wash (Exhibit 476). Meyer Farms' oil rights came from the original landowners, to whom the oil rights were reassigned by D.D. Harrington by an instrument dated July 30, 1938. Meyer Farms claims it has no connection with Panoma, and is not subject to any obligation of the Panoma-Northern contract (Meyer Farms Initial Brief at 2). Meyer Farms argues that the Commission cannot decide questions of dedication and abandonment because these issues require a determination as to whether the gas in question is casinghead gas, and, if so, who owns it under Texas law. It notes that Enforcement Staff and Dorchester did not do a phase equilibrium, test units wells, and their witness expressed an opinion on whether the gas produced from each study are, except for 15 (where the Meyer Farms wells are located), is casinghead gas (Exhibit 104 at 206). Meyer Farms points to numerous general statements in the record that it claims have no applicability to its wells and concludes that Enforcement Staff and Dorchester's position is directed to

wells completed and perforated in the brown dolomite, and the production of gas therefrom, as contrasted with its wells, which are perforated solely in the granite wash (Exhibit 476).

Meyer Farms notes that Enforcement Staff and Dorchester do not claim directly that its wells were perforated in the brown dolomite (Exhibit 104 at 233-241). It contends it has not violated Section 7(b) of the NGA for this reason, and because the casinghead gas it sells to Getty remains in interstate commerce after it is processed (through resale to Northern Natural) so that an abandonment application is not necessary.

On the dedication issue, Meyer Farms maintains its wells fall outside the scope of Enforcement Staff and Dorchester's presentation based on the admission by Northern's witness (Tr. 2585-2586):

"Q. You could have, say, on Dorchester acreage, say, in study area No. 11 here, on Exhibit Number 34, you could have wells - either Dorchester's wells or some other wells--drilled into the granite wash and/or below sea level, and Northern would not view those wells as dedicated to it under the 1952 contract?

A. That's correct."

Finally, Meyer Farms argues that because its wells are completed and perforated only in the granite wash, Enforcement Staff and Dorchester's argument that respondents' wells with up-hole completions can qualify for Section 103 pricing only if each operator first obtains the requisite "effective and efficient drainage" finding under Commission Order No. 149, 18 CFR § 271.305, is inapplicable as to it.



Respondent J.B. Watkins (Watkins) argues that the determination of whether it is producing "dry gas" involves factual finding concerning the lithology underlying its wells, and its completion and production practices. It contends these matters are beyond the Commission's NGA jurisdiction and that the NGPA Section 503(c) gives the state agency having regulatory jurisdiction with respect to the production of natural gas the responsibility for making the factual findings regarding well category determinations. Watkins would have the Commission defer on these issues to the Texas regulatory agency and state courts. It maintains that state, not federal law, should determine the definition of casinghead gas and whether gas is being properly produced from a valid oil well. Watkins does not dispute that the Commission should determine whether particular casinghead gas is dedicated to interstate commerce or whether the price received for such gas exceeded the maximum lawful price, but it contends that in determining what constitutes casinghead gas the Commission must correctly identify and properly apply Texas law because failure to do so could be "outcome determinative" in view of the Watkins facts, and thus could constitute reversible error (Watkins Reply Brief at 3).

Watkins contends there is no evidence in any Railroad Commission order to support Enforcement Staff and Dorchester's regulatory expert's position that the West Panhandle gas field is that portion of the reservoir lying above the gas-oil contact, and the Panhandle (Gray County) and Panhandle (Carson County) oil fields are that portion of the reservoir lying below the gas-oil contact (Exhibits 589, 590, 592, 595, 597, 307 and 309). Watkins argues further that the order cited by the witness does not support his theory, and that the witness paraphrased the order he relied

on and did not submit the whole order into the record (Exhibits 583; Watkins Initial Brief at 49-50).

Watkins presented a reservoir engineer who testified that all the gas from the Watkins wells is casinghead gas since it was in association with oil in the reservoir and is being produced with that oil (Exhibit 510 at 33):

In a formation such as the Brown Dolomite, there is vertical as well as horizontal communication between gas and oil. The area of vertical communication is known as the transitional zone....It is a customary, prudent production practice to perforate a wellbore to recover oil from the transitional as well as below the transitional zone. Production of free, associated natural gas necessarily accompanies the production of oil.

This expert defined casinghead gas as any gas or vapor indigenous to an oil stratum and produced from the stratum with oil, but he argued that in practical terms, a good definition is all hydrocarbon gas produced from any well classified by the Railroad Commission as an oil well (Exhibit 570 at 15).

Because Watkins wells are perforated only in the brown dolomite it contends the gas and oil produced from these wells comes from the same stratum. It relies on its expert's testimony that its oil and casinghead gas production comes from a "transition zone" where gas is mixed with and in contact with oil and which lies below the gas-oil contact (Exhibit 510; Watkins Reply Brief at 10), to explain Enforcement Staff and Dorchester's expert's tentative conclusion on the Watkins wells that "although it is possible that oil is being produced from

the brown dolomite formation, not all of the gas being produced is produced with that oil" based on the high gas-oil ratios and a phase envelope for the Watkins Bell A No. 1 well which has a somewhat different shape than a phase diagram for a well which has a somewhat different shape than a phase diagram for a well producing only casinghead gas (Exhibit 104 at 207). Watkins maintains that even if phase diagrams are valid to determine the phase of hydrocarbons in the reservoir, it is impossible to determine whether that gas was in equilibrium with oil in a reservoir based on a sample comprised of gas only (Reply Brief at 9).

Watkins does not claim the right to produce "dry gas," or gas that is not a necessary incident to the production of oil; but it does claim the right under Texas law and Railroad Commission regulations to produce oil and associated free gas from the transition zone, as Mr. Watkins identifies that zone relying on his experience in the field generally and specifically in "sitting" on the wells on adjoining acreage, his review and interpretation of gamma ray and neutron logs, and his observation of oil-stained drilling samples (Reply Brief at 12).

Watkins notes the phenomenon of coning: the creation of a mobile gas phase in the vicinity of a well bore caused by pressure reduction due to the withdrawal and production of hydrocarbons which can lead to associated free gas even in the portion of a reservoir that exhibits one hundred per cent permeability to the oil phase (Watkins Reply Brief at 11-12). It claims this phenomenon may account for the difference in gas-oil ratios on initial potential test ranging from 5,000 to 1 to 30,000 to 1, to a lease basis annual average of from 40,000 to 50,000 to 1 several years after production began (Watkins Initial Brief at 57; Tr. 3660-3662), and could also account for the

difference between the phase diagram from the Watkins Bell "A" No. 1 well and the phase diagram from the Phillips Thornburg No. 1 well as constructed by Enforcement Staff's witness (Exhibit 101; Watkins Reply Brief at 6-7).

Watkins contends that the evidence addressed in this proceeding did not produced a consistent opinion as to whether current gas-oil ratios or initial potential gas-oil ratios are appropriate for determining whether a well comports with the "excessive gas-oil ratio standard" as an Enforcement Staff witness characterized the Watkins wells, nor as to what production gas-oil ratios are high or too high. Watkins claims Enforcement Staff does not have the authority to second-guess the Railroad Commission and challenge as too high gas-oil ratios of 40,000 or 50,000 to 1 (Watkins Initial Brief at 58).

Watkins contends that there is no credible evidence that its oil wells are drawing gas from the area that would otherwise be produced by a Dorchester well. In support it cites: 1) the location of the Dorchester well in the northeast corner of Section 183 rather than in the center of the 640 acre section; 2) the location of the Watkins wells in a low area, down dip, or fault, at a subsea depth considerably lower than the depth of the Dorchester well open-hole completion; 3) the lower pressure in the reservoir; 4) the difference in Btu content between gas produced by the Dorchester well and the Watkins wells; 5) the difference in specific gravity of the gas; and 6) the uncontroverted testimony by the Watkins witness that the cumulative casinghead gas production from all the Watkins wells does not equal the acre-feet of associated gas that originally underlay even one of the drilling units assigned to a Watkins oil well (Watkins Initial Brief at 58-63; Exhibit 510 at 28).



Watkins argues that the record does not contain sufficient evidence that it has committed the violations alleged. It notes the conclusions of the expert sponsored by Enforcement Staff and Dorchester were "difficult" and "tentative" (Exhibit 264 at 26, Exhibit 104 at 207), and Watkins notes that the regulatory expert found a hypothetical oil operator similar to Watkins in compliance with all Railroad Commission rules (Watkins Initial Brief at 63-67). Particularly noteworthy to Watkins wells was casinghead gas and that he would not need a recombination analysis to tell him so (Watkins Reply Brief at 29; Tr. 3662-63), a position Watkins claims undermines another expert who had tentatively concluded that one or more of the Watkins wells maybe producing gas from above a gas-oil contact point (Watkins Initial Brief at 43-55; Watkins Reply Brief at 28-30).

Watkins claims it is patently unfair to hold it liable for overcharges under the NGPA when it has complied with the requirements of both the Railroad Commission and this Commission. Watkins prays for costs, plus attorney's fees under Commission Rule 604 because of Enforcement Staff's unreasonable refusal to admit until it filed its Initial Brief that Watkins produces crude oil from the brown dolomite.

Cabot's expert in Texas oil and gas law testified that casinghead gas is gas produced with oil from an oil well and that casinghead gas was not dedicated to the interstate market under the 1952 contract because the contract provided that the seller shall not be obligated to drill more than one well for the production of gas on 640 acres (Exhibit 466 at 14). Because 640 acres is the general spacing for a gas well in the West Panhandle Field, the expert concludes that the parties contemplated the sale of gas from gas wells, and not from oil wells (*id.* at 20).

Cabot, while fully supporting the Producer Group, stresses three Arguments:

(1) Casinghead gas is not dedicated to interstate commerce, thus there is not now, and never was, a need to obtain abandonment under Section 7(b) of the NGA; and

(2) Any gas from a well classified by the Railroad Commission as an oil well is casinghead gas, and any challenge either to the classification of the well or the character of the gas must be pursued in a state forum; and

(3) Enforcement Staff presented in its rebuttal case a new theory that any well producing above a gas-oil ratio of 2000 to 1, would indicate perforations in the free gas zone above the gas-oil contact in violation of Railroad Commission rules (Enforcement Staff and Dorchester Brief 189-211; Tr. 1119-22; 1156-57).

Cabot's third argument rests on its position that there was a violation of due process since Enforcement Staff and Dorchester did not put forward their theory until the filing of rebuttal testimony and there was nothing in the Show Cause Order which could have alerted Cabot to this theory; thus Cabot did not have notice and could not defend against the rebuttal case (Cabot Reply Brief at 29-31). Cabot also contends that the Presiding Judge's refusal to allow the Producer Group and Cabot to submit affirmative evidence opposing this rebuttal case, in the form of Railroad Commission employee depositions and additional witnesses on well classification procedures, was a denial of procedural due process. Finally Cabot believes that the gas-oil contact theory is a matter of state law, and one where the Commission should defer to the expertise of the state courts and regulatory agencies.



The Consolidated Royalty Owners (CRO) supports the Producer Group. CRO also argues that the NGPA, its legislative history, and the cases interpreting and applying the NGPA leave no doubt that:

1. All natural gas produced from wells qualifying under Section 103(c) is eligible to be sold at the NGPA Section 103 ceiling price, whether or not some of the gas also falls within NGPA Section 104: and

2. The Commission's NGA Section 1(b) jurisdiction terminated on December 1, 1978, as to first sales of all natural gas produced from wells qualifying under NGPA section 103(c) (CRO) Initial Brief at 6).

Since NGPA Section 103(c) defines a new, onshore production well and makes no distinction between gas produced from different completion locations, wells determined by the Railroad Commission to have qualified as new onshore production *ipso facto* qualify to charge Section 103 prices for all gas produced by them even if that gas, or some of it, could also qualify for Section 104 pricing (see NGPA Section 101(b)(5) which provides that if gas qualifies under more than one provision of the statute, the provision resulting in the highest price is applicable). Thus, even if certain of the gas produced from a new onshore production well is gas that qualifies under NGPA Section 104, that gas is eligible to receive the NGPA Section 103 ceiling price because all natural gas produced from a new onshore production well qualifies for the NGPA Section 103 ceiling price. CRO's basic position is that once well determinations are final and binding, the legal status of the NGPA Section 103(c) wells cannot be questioned (CRO Initial Brief at 11).

Relying in part on the Commission's Notice of Proposed Rulemaking, "Deregulation and Other Pricing Changes on January 1, 1985, Under the Natural Gas Policy Act", Docket No. RM84-14-000 (September 13, 1984), and also on the legislative history of the NGPA, CRO contends that Section 601(a)(1)(B) of the NGPA has removed natural gas that is produced from wells qualifying for NGPA Section 103(c) from the Commission's NGA abandonment jurisdiction (*Pennzoil Co. v. FERC*, 645 F.2d 360 (5th Cir. 1981) *cert. denied*, 454 U.S. 1142 (1982)).

Getty contends the Commission lacks jurisdiction and competence to make the findings required, citing Section 1(b) of the NGA and *Burford v. Sun Oil Co.*, 319 U.S. 315, *reh. denied*, 320 U.S. 214 (1943) and later cases. According to Getty the Commission's Show Cause Order has had the effect of reopening respondent's Section 103 well determinations in violation of Section 503 of the NGPA. Getty contends that until the Commission reopens and vacates respondents' final Section 103 determinations in accordance with the statutory standard and applicable regulations, these determinations are binding, and the Commission is without jurisdiction to investigate or remedy alleged violations of the NGA, or to question Section 103 pricing, with respect to gas covered by such final determinations. See NGPA §§103 and 601(a)(1)(B), 15 U.S.C. § 3431(a)(1)(B) (1982) (Getty Initial Brief at 35).

## VI. FINDINGS

To determine whether respondents are violating Section 7(b) of the NGA and/or Section 504(a)(1) of the NGPA as alleged in the Show Cause Order it is necessary to decide (1) whether certain respondents are

correct that the Commission does not have jurisdiction in these matters; (2) if the Commission has jurisdiction should it defer to state tribunals, should it initiate a joint board composed of state representatives pursuant to Section 17 of the NGA or should it here decide the central issue which is whether gas that was dedicated to interstate commerce is being unlawfully diverted or illegally priced, and (3) if all gas except casinghead was dedicated to interstate commerce what is the definition of casinghead gas, and are respondents producing and selling gas other than casinghead gas. No one has sought to remove from interstate dedication the gas from the land in question via an application pursuant to Section 7(h) of the NGA.

I deny the Producer Group's renewed motion for summary disposition (Producer Group's Initial Brief at 18) and I reject respondents' arguments that the Commission lacks jurisdiction because of Section 1(b) of the NGA ("The provisions of this Act shall apply...to the sale in interstate commerce of natural gas for resale...but shall not apply...to the production or gathering of natural gas." and/or Section 601(a)(1)(B) of the NGPA ("Committed or dedicated natural gas.--...for purposes of section 1(b) of the Natural Gas Act, the provisions of such act and the jurisdiction of the Commission under such act shall not apply solely by reason of any first sale of natural gas which is committed or dedicated to interstate commerce as of the day before the date of the enactment of this Act and which is...(iii) natural gas produced from any new, onshore production well (as defined in section 103(c) of this Act)").

Respondents' emphasis on the above quoted exemptions obscures the fact that in this proceeding the Commission is not attempting to regulate respondent's production activities but is investigating

whether respondents violated and are violating federal statutes. Sections 14, 16 and 20 of the NGA and Sections 501 and 504 of the NGPA authorize Commission action to end violations of the respective statutes. I reject respondents' position because it would lead to the absurd result that the Commission is powerless to determine whether producers are violating Federal law that Congress determined the Commission alone should enforce.

The case law on the question of jurisdiction has established the principle that the NGA Section 1(b) exemptions are to be strictly construed (*Shell Oil Co. v. FERC*, 566 F.2d 536 at 539 (5th Cir. 1978); *Public Service Commission of Kentucky v. FERC*, 610 F.2d 439 (6th Cir. 1979); and *Interstate Natural Gas Co. v. Federal Power Commission*, 331 U.S. 682 (1947)) and has made the common sense distinction between direct efforts by the Commission to regulate production, on the one hand (*Shell Oil Co. v. FERC, supra*), and on the other, the Commission's consideration of production and other non-jurisdictional activities in the course of its regulatory activities within its jurisdiction (*Colorado Interstate Gas Co. v. FPC*, 324 U.S. 581 (1945); *Public Service Commission of the State of New York v. FPC*, 287 F.2d 143 at 146 (D.C. Cir. 1961), and *Henry v. FPC*, 513 F.2d 395 (D.C. Cir. 1975)). No one here can reasonably dispute this Commission's exclusive jurisdiction to determine whether gas which had been dedicated to interstate commerce is being unlawfully diverted or priced illegally (*Mitchell Energy Corp. v. FERC*, 533 F.2d 258 (5th Cir. 1976); *Panhandle Eastern Pipe Line Co. v. Michigan Consolidated Gas Co.*, 177 F.2d 942 (6th Cir. 1949)). I find that the Commission has such jurisdiction.

It is necessary to consider next whether the Commission should defer to the Texas state courts and

the Railroad Commission in deciding certain material questions or, alternatively, to refer them to a joint board under Section 17 of the NGA. I reject both of these proposals because the issues involve the interpretation and application of federal statutes; and the alleged violations are ongoing, so that despite the number of participants, the complicated factual situations and extensive legal argument, the Commission's mandate is clear that a decision should be issued at the earliest possible date.

The question of what gas from the land covered by the Show Cause Order was dedicated to interstate commerce requires an interpretation of the 1952 gas sales contract between Panoma and Northern Natural because on June 7, 1954, the date the Commission began regulating producer gas sales in interstate commerce, gas from this acreage was being delivered to Northern Natural under the terms of that contract. Enforcement Staff and Dorchester's summary is accurate (Enforcement Staff and Dorchester Initial Brief at 96):

"The commencement of deliveries of natural gas in interstate commerce is the act which, standing alone, dedicates natural gas from those properties and makes that natural gas subject to the Commission's authority." *Mountain Fuel Supply Co. and Wexpro Co.*, 24 FERC ¶ 61,120 at 61,293, *rehearing denied*, 24 FERC ¶ 61,321 (1983); *see also J.M. Huber Corp. v. FPC*, 236 F.2d 550, 556-668 (3rd Cir. 1956), *cert. denied*, 352 U.S. 971 (1957); *Tenneco Exploration, Ltd. v. FERC*, 649 F.2d 376, 379-380 (5th Cir. 1981).

Dedication, coextensive with the obligation to continue service, attaches not to an individual sale or producer, but to the gas itself. *El Paso Natural Gas Co.*, 54 FPC 145, 149 (Opinion No. 737, 1975); *108/Hunt v.*



*FPC*, 306 F.2d 334, 342 (5th Cir., 1962), *reversed on other grounds*, 376 U.S. 515 (1964). 109/

108/ Opinion No. 737 was eventually affirmed by the Supreme Court in *Southland*. The subsequent history of Opinion No. 737 is as follows: *rehearing denied*, 54 FPC 917 (Opinion No. 737-A, 1975) *modified* 54 FPC 2821 (Opinion No. 737-B, 1975), *reversed*, *Southland Royalty Co. v. FPC*, 543 F.2d 1134 (5th Cir. 1976), *reversed*, *California v. Southland Royalty Co.*, 436 U.S. 519 (1978).

109/ The court in *Hunt* stated: "Like the ancient covenant running with the land, the duty to continue to deliver and sell flows with the gas from the moment of the first delivery down to the exhaustion of the reserve, or until the Commission, on appropriate terms, permits cessation of service under 7(b), 15 U.S.C.A. 717f(b)."

Based on the undisputed facts, i.e. that on June 7, 1954, Panoma was delivering to Northern Natural, an interstate pipeline company, gas from 93 of the wells which now belong to Dorchester, that thirty-five of these wells are on the land which is the subject of this proceeding (Exhibit 4 at 10), that the 1952 contract described the gas to be delivered and purchased as "all of the natural gas produced from the wells now drilled and hereafter to be drilled" on the subject acreage (Exhibit 7, Article I) contained no express restrictions on the type of gas to be sold, and only reserved to the seller the right to natural gasoline and other liquefiable hydrocarbons, it would seem at first blush, that Enforcement Staff and Dorchester are correct that the contract means that the parties intended "all...gas" to mean all gas including casinghead gas. However, where the contract contains arguably ambiguous language, the courts have long recognized that it is proper to use as aids for interpreting the intent of the



parties various features of the whole contract, circumstantial evidence, and the technical meanings accorded the terms and phrases used. *United States v. ITT Continental Baking Co.*, 420 U.S. 223 at 238 (1974); *Sam Rayburn Dam Electric Cooperative v. FPC*, 515 F.2d 998 at 1003 (D.C. Cir. 1975); *Energy Oils, Inc. v. Montana Power Co.*, 626 F.2d 731 (1980); *Moore v. Tristar Oil and Gas Corp.*, 528 F.Supp. 296 at 308 (1981). As noted in a well known treatise on contracts, no word or phrase has one true and unalterable meaning (*Corbin on Contracts*, One Volume Ed., Chap. 24, Sec. 535, p. 495-497 (1952)):

Sometimes it is said that "the courts will not disregard the plain language of a contract or interpolate something not contained in it"; also "the courts will not write contracts for the parties to them nor construe them other than in accordance with the plain and literal meaning of the language used." It is true that when a judge reads the words of a contract he may jump to the instant and confident opinion that they have but one reasonable meaning and that he knows what it is. A greater familiarity with dictionaries and the usages of words, a better understanding of the uncertainties of language, and a comparative study of more cases in the field of interpretation, will make one beware of holding such an opinion so recklessly arrived at. (Footnotes omitted.)

*Corbin* continues (*ibid.* Sec. 536, p. 499-500):

In view of all this, it can hardly be insisted on too often or too vigorously that language at its best is always a defective and uncertain instrument, that words do not define themselves, that terms and sentences in a contract, a deed, or a will do not apply themselves to external objects and performances, that the meaning of such terms and sentences consists of

the ideas that they induce in the mind of some individual person who uses or hears or reads them, and that seldom in a litigated case do the words of a contract convey one identical meaning to the two contracting parties or to third persons. Therefore, *it is invariably necessary*, before a court can give any meaning to the words of a contract and can select one meaning rather than other possible ones as the basis for the determination of rights and other legal effects, *that extrinsic evidence shall be heard* to make the court aware of the "surrounding circumstances," including the persons, objects, and events to which the words can be applied and which caused the words to be used. (Emphasis added and footnote omitted.)

I find relevant in ascertaining what the parties to this contract meant and how it should be interpreted, the following extrinsic evidence:

1. Contract to the typical situation (1 Williams and Meyers, *Oil and Gas Law*, § 291.7 at 292-292.1 (1983)), it was and is common in the West Panhandle Field to divide the ownership of oil rights and gas rights (Exhibit 402 at 12-13, *passim*).

2. Northern Natural, one of the parties to the 1952 contract, claims it did not thereby receive the rights to casinghead gas because the contract when read as a whole refers only to gas rights and does not mention oil rights. Northern Natural emphasizes that the contract dedicated gas rights in gas lands and leases and placed on the seller the obligation to drill wells on 640-acre spacing. (Initial Brief at 41-44, Reply Brief at 5-6). Northern Natural acted on its belief by entering into contracts to purchase casinghead gas produced from the acreage covered by the 1952 contract before this litigation began (Exhibits 372-378, 402 at 18).

3. Lawrence Hagy stated that he did not intend to assign his oil rights to Panoma, and Panoma's President, Donald Harrington, acknowledged on October 10, 1949, that Lawrence Hagy was beneficial owner of a one-third interest in the oil and oil rights under the subject acreage (Exhibit 407 and Tr. 2747-2749). Evidence of Mr. Harrington's action in 1953 and Mr. Hagy's actions since 1949 are consistent with Mr. Hagy's present understanding.

4. Casinghead gas did not move from the subject acre into the interstate market on or prior to June 7, 1954, and Northern Natural has never bought casinghead gas from Dorchester from this acreage (Tr. 2590).

5. Dorchester and Enforcement Staff's claim here that casinghead gas from the subject acreage is dedicated to interstate commerce and covered by the 1952 contract is inconsistent with Dorchester and Northern Natural's prior actions, Dorchester abandoned its Bobbit No. 1 well, located on acreage subject to the 1952 contract, in 1970 when the well's relative oil and gas production changed and it was reclassified as an oil well. The 1970 lease by Dorchester to the oil well operator acknowledges Dorchester's ownership of the gas leasehold estate. It notes the lessee's desire to use the existing casing to produce oil and casinghead gas, and grants Dorchester an undivided one-half of all casinghead gas produced for consideration for the use of the casing Dorchester had installed on the well (Exhibit 29). In 1970 Dorchester did not attempt to exercise ownership of casinghead gas from this well (Exhibits 29 and 31), and did not file an abandonment application with the Commission (Tr. 347). Northern Natural, consistent with its position that casinghead gas was not dedicated to interstate commerce, removed

its equipment from the Bobbit No. 1 well when it was reclassified as an oil well (Tr. 2469).

Based on the evidence detailed above, I find that the 1952 gas purchase contract under which deliveries took place and commitments existed on June 7, 1954 and which was the basis for the Commission's later grant of a certificate of public convenience and necessity did not include casinghead gas so that casinghead gas from the subject acreage was not, and is not, by virtue of the 1952 contract dedicated to interstate commerce.

The next question is what is meant by "casinghead gas." The term is not defined in the two federal statutes at issue--the NGA and the NGPA, but it is defined by the State of Texas. I find casinghead gas to be any gas and/or vapor indigenous to an oil stratum and produced from the stratum with oil. I reach this conclusion for several reasons. First, it is the definition the State of Texas has formally adopted and used for nearly fifty Years. (Tex. Nat. Res. Code Ann. § 86.002(10) (Vernon 1978); Title 16, Texas Administrative Code, Section 3.69 Definitions, Railroad Commission Rule 051.02.02.079; Act of May 1, 1935, ch. 120, 1935 Tex. Gen Laws, amending Art. 6008 of the Revised Civil Statutes of Texas of 1925. See Cheek, *Legal History of Conservation of Oil and Gas* 280 (1938)). Second, this definition is supported by persuasive expert scientific and engineering testimony (Exhibit 104, *passim*; Exhibit 264 at 44; and Tr. 891, 1025). Third, this finding is in keeping with the language in *FPC v. Panhandle Eastern Pipe Line Co.*, 337 U.S. 498 at 513 (1949), that state and federal regulation should produce harmonious regulation.

The Natural Gas Act was designed to supplement state power and to produce a

harmonious and comprehensive regulation of the industry. Neither state nor federal regulatory body was to encroach upon the jurisdiction of the other. Congress enacted this Act after full consideration of the problems of production and distribution. It considered the state interests as well as national interests. (Footnote omitted.)

This is not to say that the Commission, as matter of law, would be bound to apply a state definition if such definition was unreasonable on its face; or if its adoption would necessarily frustrate implementation of the purpose of the federal statutes, *see, e.g., United Gas Improvement Co. v. Continental Oil Co.*, 381 U.S. 393, 400 (1965) (the purposes of the Natural Gas Act would be frustrated if regulation thereunder were made to depend upon technical title concepts of local law). Finally, the definition advocated by respondent's "any gas produced from an oil well" places the emphasis on the well type rather than what the well produces, and would lead to the absurd conclusion that regardless of how the well got to be categorized as an oil well the gas it produced would automatically be casinghead gas without regard to what scientific tests showed it to be, and without regard to the State's own statutory and regulatory definition of casinghead gas.

Once gas is dedicated to interstate commerce it remains dedicated until the Commission finds under the NGA the dedication is no longer necessary in the public interest (*Amoco Production Co.*, 23 FERC ¶ 61,211 at 61,429-61,430 (1983); *Argo Oil Corp.*, 15 FPC 601, 622 (1955); *J.M. Huber*, 14 FPC 340, 341-342, 348-350 (1955), *aff'd J.M. Huber Corp. V. FPC, supra*; *Dixie Pipe Line Co.*, 14 FPC 106, 111-115 (1955)), or unless it falls within the scope of Section 601 of the NGPA,



Respondents contend that even if gas was once dedicated, the Commission's jurisdiction ended pursuant to Section 601 of the NGPA when they received their final Section 103 well determinations. Determinations that a particular well or gas is eligible for incentive pricing under Section 102, 103, 107 or 108 of the NGPA are final and binding once they are no longer subject to Commission or judicial review unless based on an untrue or omitted statement of material fact (*Ecee, Inc. v. FERC*, 645 F.2d 339 at 345 (5th Cir. 1981)).

For the following reasons I reject respondents' argument that NGPA Section 601 removes the gas in question from the Commission's jurisdiction. The evidence is persuasive that many respondents received Section 103 determinations based on submissions showing no perforations in the brown dolomite and then they subsequently made such perforations and did not inform the Railroad Commission even though Railroad Commission regulations require the submission of amended W-2 forms in such a situation (Exhibit 306). Since Railroad Commission regulations prohibit perforations by oil wells above the gas-oil contact this information would seem to merit the designation omission of a material fact as that term is used in NGPA Section 503(d)(1). However, the logic of this reasoning is countered by the fact that the Railroad Commission has granted and this Commission has left undisturbed some 55 Section 103 determinations to respondents where the applications showed perforations in the brown dolomite (Exhibit 331). This suggests that perforation in the brown dolomite is not necessarily inconsistent with an oil well classification, depending on the location of the gas-oil contact. For purposes of this proceeding, I accept the fact that respondents have final Section 103 well determinations but I find these determinations cover



only casinghead gas, i.e., gas indigenous to an oil stratum and produced from that stratum with oil. This finding is required by the logic and language of the NGPA and the integrity of the regulatory scheme. Section 103 states:

SEC. 103. CEILING PRICE FOR NEW, ONSHORE PRODUCTION WELLS. (a) APPLICATION--in the case of natural gas determined in accordance with section 503 to be produced from any new, onshore production well, the maximum lawful price computed under subsection (b) shall apply to any first sale of such natural gas delivered during any month.

\* \* \*

(c) DEFINITION OF NEW, ONSHORE PRODUCTION WELL.--For purposes of this section, the term "new, onshore production well" means any new well (other than a well located on the Outer Continental Shelf)--

- (1) the surface drilling of which began on or after February 19, 1977;
- (2) which satisfies applicable Federal or State well-spacing requirements, if any; and
- (3) which is not within a proration unit--

- (A) which was not in existence at the time the surface drilling of such well began;
- (B) which was applicable to the reservoir from which such natural gas is produced; and

(C) which applied to a well (i) which produced natural gas in commercial quantities or (ii) the surface drilling of which was begun before February 19, 1977, and which was thereafter capable of producing natural gas in commercial quantities.

Section 2 (8) states: PRORATION UNIT.--  
The terms "proration unit" means--

(A) any portion of a reservoir; as designated by the State or Federal agency having regulatory jurisdiction with respect to production from such reservoir, which will be effectively and efficiently drained by a single well;

Section 2 (6) states: RESERVOIR.--The term "reservoir" means any producible natural accumulation of natural gas, crude oil, or both, confined--

(A) by impermeable rock or water barriers and characterized by a single natural pressure system; or

(B) by lithologic or structural barriers which prevent pressure communication.

I interpret this language to mean that the NGPA Section 103(c) definition of "new, onshore production well" does not apply to respondents' wells to the extent they are within an existing Dorchester proration unit which is applicable to the reservoir from which respondents' wells would produce gas. The evidence shows that most respondents' wells are producing gas which Dorchester would otherwise produce from its existing proration units and the Railroad Commission

has made no finding that respondents' wells are necessary to effectively and efficiently drain that portion of the reservoir from which Dorchester's wells are producing gas. According to the NGPA Section 103(c), these respondents are therefore not entitled to a Section 103 well category determination for gas from the Dorchester proration units. Consistent with this holding is the reasonable assumption that the Railroad Commission's grant of Section 103 status was in keeping with the Texas statutory definition of casinghead gas so that respondent oil well operators' Section 103 determinations cover only gas from below the gas-oil contact, i.e. gas indigenous to an oil stratum and produced from the stratum with oil. This rationale may also explain why neither the Railroad Commission nor this Commission has acted to reopen respondent's Section 103 determinations.

The result reached here comports with the purpose and preserves the integrity of both the NGA and NGPA. The argument urged by respondent's would, to the contrary, lead to the unwarranted conclusion that, with the NGPA, Congress intended that gas already dedicated to interstate markets under the NGA could, without Commission authorization, be denied to those markets which rely on that gas and instead sold elsewhere at incentive prices if produced from new wells for which, as to that gas, there was no economic justification. I find it unreasonable to assume that Congress intended incentive prices to apply to gas which would be produced from existing wells and for which the new wells were not necessary.

The final question is whether, based on the conclusions reached above, respondents have been and are continuing to violate federal law by unlawfully diverting dedicated gas to intrastate markets or are selling gas at prices higher than those allowed.

For the reasons stated below I find all respondent oil well operators named in the Show Cause Order, except Meyer Farms, Komanche Oil & Gas, Stowers Oil & Gas, and J.B. Watkins, to be selling in intrastate commerce gas which is dedicated to interstate commerce in violation of Section 7(b) of the NGA and at prices which violate Section 504 of the NGPA.

Since the Railroad Commission has established a division of the reservoir so that the Panhandle West Gas Field is that portion of the reservoir lying above the gas-oil contact, it follows that Dorchester's proration unit is that portion of the reservoir above the gas-oil contact which lies beneath each 640-acre unit assigned to a Dorchester well. Perforations in the brown dolomite by themselves are not conclusive evidence that respondents are producing and selling gas which was dedicated to interstate commerce by the 1952 contract and for which a just and reasonable rate was in existence on the day before the NGPA was enacted. What is determinative is whether or not respondents' gas production comes from above the gas-oil contact because this would mean that such production was not casinghead gas but was gas dedicated to interstate commerce and if produced from within a Dorchester proration unit was gas limited to Section 104 pricing. The location of the gas-oil contact is determined in each individual well bore and may vary from one well to another. Several respondents testified they did not know or bother to ascertain where the gas-oil contact was in their particular wells (Exhibits 582 at 2-3, Tr. 1634, 2887). Enforcement Staff and Dorchester located it directly in only one instance (Exhibit 74) but attempted to locate it for all respondents' wells indirectly by the secondary evidence set forth in their case-in-chief.

The basis of my findings is the totally persuasive evidentiary presentation of the expert witnesses sponsored by Enforcement Staff and Dorchester. This overwhelmingly convincing presentation is detailed in Appendix C and in the Argument. Except as to respondents Meyer Farms and J.B. Watkins, I accept these experts' conclusions set out in this appendix and in the Argument section of this Decision. These conclusions, based on accepted scientific principles of geology, chemistry, and reservoir engineering, leave no doubt that most of the gas produced by most of the respondents is not casinghead gas because it is not gas indigenous to an oil stratum and produced from that stratum with oil, and that most of the respondents are producing gas which would otherwise be produced by Dorchester. I reject respondents' position that the brown dolomite formation as encountered by all respondents' wells in the area covered by the Show Cause Order produces crude oil such as would justify a finding that their gas production from the brown dolomite was indigenous to an oil stratum. Respondents try to explain away the implications of the evidence but they do not deny as facts the very high gas-oil ratios from most of their wells which occurred after the wells were completed initially and when they were perforated up-hole in the brown dolomite, the precipitous drop in the pressure versus cumulative production curve of most of the 35 Dorchester wells which occurred at about the same time period, the results of the equilibrium tests and the geologist's description of the brown dolomite in each study area. The attacks on the results of the ASTM 86 distillation tests, the various hydrocarbon analyses including the recombination analyses and the phase diagrams were unsuccessful in demonstrating that the sponsoring witness did not know what he was doing, did not conduct the test properly or that the test did not produce a valid scientific result (Tr. 715-1468).



Even if true in every instance, the personal recollections and experiences testified to by respondents and witnesses for them do not refute the validity of the expert views of witnesses for Enforcement Staff and Dorchester. This is because it is obvious from the record that it is not usual, for example, to find shows of oil in cores and various kinds of rock samples but these isolated bits of visual evidence are unreliable indicators of whether crude oil will be produced at all, or in any meaningful quantities (Exhibit 73 at 17-18; Tr. 563-568).

I reject Producer Group's "vaporized oil" argument that all wells, including Dorchester's, perforated in the brown dolomite are producing gas which is associated in the stratum with crude oil and thus is casinghead gas. Even if it is true that some of the brown dolomite gas production may derive from the vaporization of crude oil as reservoir pressure declines, such gas is not crude oil under any reasonable and practical understanding of that term nor does it come within the definition of casinghead gas that I have adopted in this proceeding. Producer Group's argument, if accepted, would lead to the self-contradictory conclusion that Dorchester's wells which produce no crude oil are nonetheless producing casinghead gas.

I do not find that Meyer Farms has committed the violations alleged. Even under the substantial evidence standard (NGA Section 19(b); NGPA Section 506(a)(4)), the fact of high gas-oil ratios by itself is not persuasive that this respondent's gas production was not casinghead gas. No phase equilibrium studies are in evidence for these wells. I note that the Meyer Farms testimony that its three wells are completed only in the granite wash went into the record without any cross-examination (Exhibits 476-489; Tr. 3054).

Also Enforcement Staff and Dorchester's third expert claimed the lease's gas production volumes were quite substantial "beginning in 1981" (Exhibit 104 at 238), yet the evidence shows they were considerably higher in 1970 through 1976, years that predate the NGPA (Exhibit 242). The expert sponsored by Enforcement Staff and Dorchester admitted that the results of the pressure versus cumulative production curve for the Dorchester well was inconclusive that Meyer Farms' Coffee lease was draining the Dorchester well, and this was the only study area where he did not come to a definitive conclusion that the respondent's gas production was or was not casinghead gas. Taken all together, I find the evidence of the lease's atypical gas-oil ratios insufficient to support the alleged violations, and I recommend that the Commission undertake to get additional information to determine whether this respondent has committed the violations alleged in the Show Cause Order.

I find that Lucky Bird Petroleum and those respondents shown on Appendix C to Producer Group's Initial Brief and those named in Exhibit 599 have committed the alleged violations notwithstanding that these respondents derive their title to oil and casinghead gas outside the chain of title that went from Hagy, Harrington and March to Panoma. The essential fact, which no one has refuted successfully, is that the gas rights in all this acreage are dedicated to interstate commerce; and this dedication includes all gas except casinghead gas as previously defined.

As to the three respondents who are selling gas in interstate commerce, I find based on the expert testimony summarized in Appendix C that Komanche Oil & Gas and Stowers Oil & Gas have violated NGPA Section 504 by selling gas dedicated to interstate commerce at prices higher than what the NGPA allows.

I find that the evidence is not persuasive that J.B. Watkins has committed similar violations of the NGPA (Exhibits 104 at 207, 264 at 26; Tr. 3662-63). The evidence shows J.B. Watkins to be the only respondent whose wells produce crude oil and gas from the brown dolomite. Contrary to the assertion by the third expert sponsored by Enforcement Staff and Dorchester (Exhibit 264 at 27), which was repeated in some briefs, there was no admission by the Watkins witness that Watkins perforated above the gas-oil contact. Unlike the other respondents, except Meyer Farms, Enforcement Staff and Dorchester's third expert qualified his conclusion as to J.B. Watkins. It is not sufficient in my judgement to find a respondent guilty of these serious violations based only on high gas-oil ratios and a "somewhat different" phase diagram. I do not find persuasive the conclusion made "tentatively" by an expert that something is "quite possible" when the same expert has been decisive in his opinions on the same subject as to other respondents. Here again I recommend that the Commission undertake to get additional information to determine whether this respondent has committed the alleged violations.

Because of the impact various factors had on the ultimate outcome of this proceeding, I find Enforcement Staff's refusal to enter a stipulation with J.B. Watkins that its crude oil production came only from the brown dolomite not be within that type of refusal covered by 18 CFR § 385,604. In addition such a stipulation would have been of no substantial importance since the critical distinction is the location of the gas-oil perforation in the brown dolomite. Therefore, I deny Watkins request for recovery of costs under Rule 604.

Finally, as requested by the parties, pages 129 through 132 of transcript Volume 26 from Texas

Railroad Commission Oil and Gas Division Docket No. 10-77, 314 is received in evidence as Exhibit 618, and the Judgement and Ordering Vacating Judgment in *Dorchester Gas Producing Company v. The Harlow Corporation, et al.*, Case No. 84-505910, 99th District Court, Lubbock County, Texas, are received in evidence as Exhibits 619 and 620, respectively.

## VII. REMEDY RECOMMENDED

I recommend that the Commission order respondents, except Meyer Farms and J. B. Watkins, to cease immediately the violations of the federal statutes detailed in the preceding section of this decision, gather additional information as to these two respondents, and issue an order setting forth a procedural schedule for phase two of this proceeding promptly after the Commission's decision becomes administratively final.

/S/

Brenda P. Murray  
Administrative Law Judge

**APPENDIX A**  
**LIST OF RESPONDENTS AND WELLS**  
**STOWERS OIL & GAS COMPANY, ET AL.**

<b>Respondent</b>	<b>Well Name</b>
1. Tony D. Richardson and J.C. Albin, d/b/a A & R OPERATING CO.	Sheridan #1
	Sheridan #2
2. James R. Allen and John L. Womack, d/b/a ALMAC OIL COMPANY	Big Bull #1
	Big Bull #2
3. ASPEN PETROLEUM, INC.	Bucket Shop #1
	Bucket Shop #2
	Harris #1
	Harris #2
	Harris #5
	Harris #6
	Fields #3
	Fields #4
	Fields #7
	Fields #8
	Warnick #1
	Warnick #2
	Warnick #3
	Warnick #4
	Bell #1
	Bell #3
	Sheridan #2
	Sheridan #4
	Sheridan #7
	Sheridan #8
	Jones #3
	Jones #4
	Jones #5
	Jones #6
	Chadwick #1
	Chadwick #7



- 1
- Chadwick #8  
Chadwick #9
4. BINK, INC. Ann #1  
Ann #2
5. Don Boddy and Shirley Boddy, d/b/a  
CADD O PRODUCTION Faith #1A 4
6. CAPROCK ENGINEERS, INC. Zack #1  
Zack #2
7. DAHALO LEASE CORPORATION Vanderburg #1  
Vanderburg #2  
Vanderburg A #1
8. ENERGY-AGRI PRODUCTS, INC. Money #1  
Money #2  
Peeler II #1  
Peeler #2  
Peeler #3  
Peeler #4  
Henry #1  
Henry #2  
Henry #3  
Henry #4
9. David Nall, d/b/a  
EZEKIEL ENERGY Justin #1-2  
Kelly #1-1
10. THE HARLOW CORPORATION Beavers #1  
Beavers #2  
Beavers #3  
Beavers #4
11. Judy Cook, Vernon Cook, and Jimmie Bell #2  
Boddy #1

Allen, d/b/a  
JUDY OIL COMPANY

Boddy #2  
Lloyd #2  
Lloyd #3  
Bell #3

12. KAARI OIL COMPANY, INC.

Haiduk "A" #17  
Haiduk "B" #18  
Columbia #1-3  
Columbia #2-4  
Haiduk "C" #1-13  
Haiduk "C" #2-14  
Haiduk "C" #2-18  
Haiduk "D" #4-22  
Future #3  
Future #4  
Future #1-5  
Future #2-6  
Future "B" 1-15  
Future "B" 2-16  
Randall #1  
Randall #2

13. KIM PETROLEUM CO., INC.

Dennis #1  
Dennis #2  
Dennis #4

14. Tonya Starbuck, V.T. Stowers,  
and K.A. Roberts, d/b/a  
KOMANCHE OIL & GAS

Cobb #1  
Cobb #2  
Cobb #3  
Cobb #4  
Cobb #5

15. LEAR OIL & GAS, INC.

Sandra #1

16. LUCKY BIRD PETROLEUM INC. Thornburg #3

Thornburg #4  
Thornburg #5  
Thornburg #6

- |   |  |
|---|--|
| 17. MAGNET OIL, INC.  | Dania #3   |
| 18. MEYER FARMS INC.  | Coffee #1<br>Coffee #2<br>Coffee #3  |
| 19. DENNIS MILLS ENTERPRISES, INC.                                  | Heidi #3<br>Heidi #4   |
| 20. Warren Chisum, d/b/a<br>OMEGA ENERGY                            | Ginn #1<br>Ginn #2<br>Ginn #3  |
| 21. PANHANDLE ENERGY CORP.  | Alley #1<br>Alley #2<br>Wade "L" #1  |
| 22. PANSTAR OIL & GAS, INC.   | Hildreth #1<br>Hildreth #2   |
| 23. W. L. Bruce and<br>James R. Allen, d/b/a<br>PRAIRIE OIL COMPANY | Alley #2<br>Koell #1<br>Koell #2<br>Steel #1<br>Steel #2   |
| 24. RAVEN ENERGY, INC.  | Jeanne #1<br>Jeanne #2<br>Snapp #1<br>Snapp #4<br>Martha #1 <sup>10</sup><br>Martha #2 <sup>11</sup> |
| 25. SECURITY PETROLEUM<br>DRILLING, INC.                            | Sheridan #2<br>Sheridan #4<br>Evans #1<br>Evans #4   |

	Evans #6
	Evans #7
	Evans #8
26. Sharon Caldwell Ward, d/b/a SHARON LEASE OIL CO.	Sharon #1 Sharon #2 Sharon #3 Sharon #4
27. L.R. Spradling and V.T. Stowers, d/b/a STOWERS OIL & GAS COMPANY	Mackie #1 Mackie #2 Mathers #1 Mathers #2 Bednorz #1 Bednorz #2 Bednorz #3 Bednorz #4 Bednorz #6
28. TRI-EX OIL & GAS INC.	Culbertson 1-6 Culbertson 2-6 Culbertson 3-6 Culbertson 4-6 Culbertson 5-6 Culbertson 7-6 Culbertson 8-6
29. Virgil Hess, d/b/a TUMBLEWEEK PRODUCTION CO.	Linda #3 Linda #4 Haiduk #1 Haiduk #2
30. VANDERBURG EXPLORATION INC.	Sandy #1 Sandy #2 Vandy #1 <sup>12</sup> Vandy #2 <sup>12</sup>
31. VANDERBURG PRODUCTION,	Vanderburg #1

INC.

Vanderburg #2

32. WALKER OPERATING  
CORPORATION

Burger #1  
O'Neal #1  
O'Neal #3  
O'Neal #4  
Sargent #1  
Sargent #3  
Sargent #4

33. BOB WALLACE OIL, INC.

Hays Trust 1-7  
Hays Trust 2-7  
Hays Trust 3-7  
Hays Trust 4-7  
Hays Trust 5A-7  
Hays Trust 6-7  
Hays Trust 7-7  
Hays Trust 8-7

34. J.B. WATKINS

Bell #2  
Bell #3  
Bell #4  
Bell #5  
Bell #6  
Bell #7  
Bell #8  
Bell #9  
Bell A #1  
Bell A #3  
Bell B #1

35. WY-VEL CORPORATION

Weinheimer #1  
Weinheimer #2  
Patrick #1  
Hodges #1  
Hodges #2  
Coffee #1  
Dennis #1



Cobb #1  
Cobb #2

36. ZENA-B OIL & GAS, INC.

Ginn #1  
Ginn #2

37. 3 W OIL, INC.

Arkie-Bill #1  
Arkie-Bill "A" #3  
Tieman #1  
Tieman #2  
Tieman #3  
Tieman #4

SOURCE: Show Cause Order, Appendix A (26 FERC 61,207).

#### FOOTNOTES

<sup>4</sup> Formerly the Bell #1A operated by Judy Oil Company.

<sup>7</sup> Now Columbia #H-1, formerly Haiduk "A" #2.

<sup>8</sup> Now Columbia #H-2.

<sup>10</sup> Formerly Haiduk "A" #3 (Kaari Oil Company).

<sup>11</sup> Formerly Haiduk "A" #4 (Kaari Oil Company).

<sup>12</sup> Formerly the Vanderburg Lease wells operated by Stowers Oil & Gas Company.

**APPENDIX B  
PRODUCER GROUP  
WELLS NOT IN THE BROWN DOLOMITE**

<b>Respondent</b>	<b>Well Name</b>
Aspen	Harris No. 1 Harris No. 6
Caprock Engineers	Zack No. 1
Harlow Corp.	Beavers No. 3 Beavers No. 4
Komanche Oil & Gas	Cobb No. 3 Cobb No. 5
Raven Energy	Jeanne No. 1 Snapp No. 4
Stowers Oil & Gas	Mackie No. 2 Mathers No. 2 Bednorz A No. 2 Bednorz B No. 3 Bednorz B No. 6
Wy-Vel Corp.	Coffee No. 1 Hodges No. 2
Kaari Oil	Columbia No. 1-3 Future No. 3 Future No. 1-5

**SOURCE:** Exhibit 1A as modified by Exhibit 104 at 54-55.

## —APPENDIX C

<b>Study Area</b>	<b>Dorchester Well</b>
1 (Exhibit 104 at 23-35, Exhibits 35, 111-114)	McConnell No. 4 (Section 46, Block 4, I&GN RR Survey Carson Country

<b>Respondent's Well</b>	<b>Completion Date</b>
Prairie Alley No. 2	1982

### **Evidence**

Dorchester's well is perforated in the brown dolomite. Respondent's well is perforated in the brown dolomite and granite wash. Pressure versus cumulative production of Dorchester's well fell sharply in 1982 when respondent's well began gas production. When production began the Prairie Alley lease was producing about 300 barrels of oil and 1,100 Mcf of gas per month and has a gas-oil ratio of 3,775 cubic feet of gas to 1 barrel of oil. In December 1983 the lease produced 35 barrels of oil and 3,300 Mcf of gas for a gas-oil ratio of 94,400 cubic feet of gas to 1 barrel of oil. The brown dolomite has no structural relief and the formation is continuous throughout the study area. Wells on the lease adjacent to Dorchester's gas well proration unit are completed in the granite wash and have no gas production. Prairie Alley lease does not have a gas processing unit.

## Conclusion

Significant gas volumes produced by respondent's well are from the brown dolomite. Pressure reduction in Dorchester's well is due to respondent's gas production which is evidence of drainage. Respondent is producing gas that would have been produced from Dorchester's well. Respondent's liquid production is crude oil which is not from the brown dolomite formation. Support for this conclusion is found in the fact that Dorchester well completed in the brown dolomite produces no crude oil and the brown dolomite formation is continuous with little structural relief. Almost all respondent's gas production is not casinghead gas, i.e., gas which is indigenous to an oil stratum and is produced from the stratum with oil. Respondent's well is draining portion of the reservoir underlying the Dorchester acreage and it is not necessary for effective or efficient drainage that it do so.

### Study Area

### Dorchester Well

2  
(Exhibit 104  
at 35-46,  
Exhibit 36,  
115-117)

Beavers No. 1  
(Section 117,  
Block B-2, H&GN  
RR Survey,  
Gray Country

### Respondent's Well

### Completion Date

Harlow Corp.  
Beavers Nos.  
1-4

1980-1982

## Evidence

Form W-2 shows only perforations for the Harlow wells in the granite wash. Stipulated that additional perforations made in 1981 in the No. 1 well in the brown dolomite and just below the granite wash marker, and in the No. 2 well in the brown dolomite and granite wash. No gas processing unit on the lease.

The month when perforations made in the brown dolomite (October 1981) gas-oil ratio for the lease went from 22,000 to 1, to 82,500 to 1, and the following month it was 137,000 to 1. Pressure versus cumulative gas production shows a regular linear trend line from 1966 until prior to 1984. Brown dolomite formation in the area is of uniform thickness with little structural relief.

## Conclusion

Gas-oil contact is at approximately 183 feet above sea level (Exhibit 264 at 14). Lease is producing significant gas volumes from the brown dolomite formation. Withdrawal of these volumes is responsible for the sharper decline in pressure shown on pressure versus cumulative production trend for the Dorchester well after 1983. Reason to blame the Harlow wells and not other area wells is that they are close to Dorchester's wells, and the pressure versus cumulative production decline curve of the Dorchester well did not change until after Harlow wells perforated the brown dolomite. Sage Petroleum Company Beavers lease on the same section as the Dorchester well is completed in granite wash formation in an interval overlapping the Harlow wells' producing interval and produces no gas. Gas produced from Harlow Beaver Nos. 1 and 2 wells is not casinghead gas, i.e., not indigenous to an oil stratum and produced with oil, and is the same gas the would



have been and would be produced from the Dorchester well. Respondent's wells are draining the portion of the reservoir which would otherwise be drained by the Dorchester well, and they are not necessary to effectively and efficiently drain the reservoir. Small amount of liquid attributable to respondent's lease is probably crude oil which is not from the brown dolomite.

<b>Study Area</b>	<b>Dorchester Well</b>
3 (Exhibit 104 at 46-73, Exhibits 37, 38, 39, 118-127)	Bednorz No. 1 and Cobb No. 1 (Sections 183, 184 and 203 of Block 3, I&GN RR Survey, Gray and Carson Counties
<b>Respondent's Wells</b>	<b>Completion Date</b>
Stowers Bednorz Nos. A-1, A-2 B-3, B-4 and B-6 Wy-Vel Cobb Nos. 1 and 2	1980 1982 1980-81
Almac Bucket Shop Nos. 1 and 2	1982
Komanche Cobb Nos. 1, 2, 4 and 5	

## Evidence

Brown dolomite formation is relatively flat and continuous. Form W-2 for Stowers Bednorz No. A-1 and No. B-4 show completions in the granite wash but additional completions have been made in brown dolomite. Almac Bucket Shop Nos. 1 and 2, Komanche Cobb Nos. 1, 2 and 4, Wy-Vel Cobb Nos. 1 (probable) and 2 also perforated in brown dolomite as well as granite wash. Substantial gas production from the Almac Bucket Shop, Komanche Cobb, Stowers Bednorz A and B and Wy-Vel Cobb leases. ARCO Oil and Gas Company well located just south of Dorchester Bednorz No. 1 well and the Stowers Bednorz wells, and Mobil Producing Texas and New Mexico well located 600 feet south of the Komanche Cobb wells are completed only in granite wash and produce negligible amounts of gas. Pressure versus cumulative production graph for Dorchester Cobb No. 1 was quite linear for 1966 through 1977. Marked decline in pressure after 1977 when Komanche Cobb lease, Wy-Vel Cobb lease, and Almac Bucket Shop wells increased area gas production. Wy-Vel Cobb lease has a gas processing unit. Pressure versus cumulative production graph for Dorchester Bednorz No. 1 was linear from 1973 through 1977 with a marked departure from prior trend after 1977.

## Conclusion

Respondents' gas production is from the brown dolomite. Conclusion supported by fact that ARCO and Mobil Oil wells completed only in the granite wash produce negligible amounts of gas. The market departure from the pressure versus cumulative production trend for the Dorchester Bednorz No. 1 and Cobb No. 1 wells was caused by respondents' gas production. Reduction in pressure is evidence of

drainage from Dorchester's wells to respondent's leases. Respondents are producing gas that would have been and would be produced from the Dorchester wells. Liquid produced on all but the Wy-Vel Cobb lease is oil not produced from the brown dolomite. Little, if any, of the liquid produced from Wy-Vel Cobb lease is oil as demonstrated by hydrocarbon analyses of outlet liquid of gas processing units. Small oil volume is not produced from the brown dolomite. Respondents' gas production is not casinghead gas because it is not indigenous to an oil stratum and is not produced from the stratum with oil. Respondents' wells are draining the portion of the reservoir that would otherwise be drained by the two Dorchester wells. Respondents' wells are not necessary to effectively and efficiently drain this portion of the reservoir.

**Study Area****Dorchester  
Well**

4  
(Exhibit 104  
at 63-73,  
Exhibits 40,  
128-132)

Wilson-Hart  
No. 1 (Section  
176, 177, 184  
and 185, Block 3,  
I&GN RR Survey,  
Gray County

**Respondent's  
Wells****Completion  
Date**

Lear Oil & Gas,  
Inc., Sandra No. 1

1983

Panstar Oil &  
Gas Inc.  
Hildreth Nos.  
1 and 2

1983

Dennis Mills	1982-
Enterprises, Inc.	1983
Heidi Nos. 3 and 4	

## Evidence

Brown dolomite formation is relatively flat and uniformly thick, W-2's show completion in brown dolomite for Sandra No. 1 and Heidi No. 3. Stipulated that Heidi No. 4, Panstar Nos. 1 and 2 also perforated in brown dolomite. The Dennis Mills Heidi lease and the Panstar Hildreth leases have gas processing units. Dorchester will produce average of 24 Mcf per day in 1983, when the Hildreth and Heidi leases had a per well average of 165 Mcf. Dorchester well shows a departure from the historical trend line in 1982 and 1983 when Dennis Mills Heidi lease and Panstar Hildreth lease began producing gas.

## Conclusions

Respondents' five wells are producing significant gas volumes from the brown dolomite; this gas is the same gas that otherwise would have been and would be produced from the Dorchester Well. Decline in pressure of the Dorchester well due to drainage by Hildreth Nos. 1 and 2 and Heidi Nos. 3 and 4. More than likely liquid produced from the Lear Sandra lease is oil not from the brown dolomite, but little, if any, liquid produced from the Heidi and Hildreth leases is oil. Because the brown dolomite formation is continuous other wells completed in the same producing level should have the same results. Respondents' wells are not producing casinghead gas because gas is coming from the brown dolomite and oil is not, so gas is not indigenous to an oil stratum and produced from that stratum with oil. Respondents' wells are not necessary to effectively and

efficiently drain that portion of the reservoir which is drained by the Dorchester well.

<b>Study Area</b>	<b>Dorchester Well</b>
5 (Exhibit 104 at 73-92, Exhibits 41, 42, 43, 133-142	Warren No. 1 Durrett No. 1 Pickens No. 1 (Sections 6, 7 16 and 17 Block 7, and Sections 6 and 7, Block 4, I&GN RR Survey, Carson County)
<b>Respondent's Wells</b>	<b>Completion Date</b>
Tri-Ex Oil Gas Culbertson Nos. 1-6, 2-6, 3-6, 4-6, 5-6, 7-6, and 8-6	1981, 1982
Tri-Ex Oil & Gas Hays Trust Nos. 1-7, 2-7, 3-7, 4-7, 5A-7, 6-7, 7-7 and 8-7	1981, 1982
Lucky Bird Petroleum Thornburg Nos. 3-6	1980- 1982

### **Evidence**

Brown dolomite has uniform thickness of about 200 feet, little structural relief except an 80 foot dip near Dorchester Pickens No. 1. Dorchester Warren No. 1



had a linear pressure versus cumulative gas production trend from 1977 until 1982 when wellhead shut in pressure began to decline more rapidly. Dorchester Durrett No. 1 shows linear trend of pressure versus cumulative production from 1966 to 1976 when it was fracture treated. From 1982 pressure declined more rapidly than would be expected. Dorchester Pickets No. 1 shows rather linear trend of pressure versus cumulative gas production from 1966 through 1980. Pressure drop accelerated after 1980. Contrary to information on W-2 forms, parties stipulate that respondents' wells were completed in brown dolomite, except Culbertson No. 6-6 which was plugged and abandoned. Culbertson, Hays Trust, and Thornburg leases have gas processing units. Each of the Culbertson wells average some 200 Mcf per day in 1983 when Dorchester Warren No. 1 produced a daily average of 144 Mcf. Each of eight wells on the Hays Trust lease produced approximately 120 Mcf per day in 1983, when Dorchester Durrett produced a daily average of 170 Mcf. The Lucky Bird Thornburg lease increased gas production substantially when No. 3 well completed. Lucky Bird Thornburg lease averaged 153 Mcf per well in 1983 compared to Dorchester's Pickens No. 1 well of 76 Mcf per day. Phillips Petroleum Thornburg lease, five wells in the southwest quarter of the section not perforated in the brown dolomite, produces very little gas. Its gas-oil ratio has ranged from 839 to 5,100 cubic feet of gas per barrel of stock tank liquid from 1970 through February 1984.

## Conclusion

Respondents' wells are producing significant gas volumes from the brown dolomite. Evidence includes: completions in this formation, their high gas-oil ratios, and the change in the pressure versus cumulative production trend of Dorchester's three wells which

coincides with significant gas production from respondents' wells. Respondents' wells are producing gas that otherwise would have been or would be produced from Dorchester wells on whose proration units respondents' wells are situated. Little, if any, of the liquid produced on respondents' leases is oil and what is oil is not produced from the brown dolomite. Dorchester's wells completed only in brown dolomite do not produce any oil. Respondents' gas production is not casinghead gas.

Study Area	Dorchester Well
6 (Exhibit 104 at 92-109, Exhibits 44, 45, 46, 143-157)	Bryan No. 1 Haiduk No. 1 (Section 1, 2 21 and 22, Block 4, I&GN RR Survey Carson County)
Respondent's Wells	Completion Date
Kaari Oil Co. Haiduk, D Nos. 2-18 & 4-22	1983
Ezekiel Energy Kelly Nos. 1-1, and 1-2	1982
Kaari Oil Co. Columbia Nos. 1-3, 2-4, H-1 and H-2 and Haiduk C Nos. 1-13 and 2-14	1982- 1983

Raven Energy, Inc., Martha Nos. 1, 2	1982- 1983
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Tumble Weed Production Co. Haiduk Nos. 1 and 2	1982
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## Evidence

Brown dolomite is flat, uniformly thick with little structural relief. Several non-respondent leases located near Dorchester's Bryan No. 1 well have very high gas-oil ratios. Trend of pressure versus cumulative production graphs for Dorchester Bryan No. 1 and Dorchester's Haiduk No. 1 were linear prior to 1975, with increasing downward slope between 1975 and 1981 and sharp drop in 1981 and 1982. In 1975 Natural Gas Pipeline Bednorz No. T-1 well located on Dorchester proration unit immediately south of Dorchester's Haiduk No. 1 proration unit substantially increased gas production. Respondents' leases and several non-respondent leases in study area 6 have high producing gas-oil ratios. Gas-oil ratio for the Kaari Oil Company Haiduk D lease ranged from 8 to 99,925 cubic feet of gas per barrel of stock tank liquid. All respondents' leases are equipped with gas processing units and all respondents' wells are perforated in the brown dolomite as well as the granite wash.

## Conclusions

Production in 1975 from Natural Gas Pipeline Co. J.H. Ubanozyk No. L-2 gas well and production from respondents' wells and non-respondents' wells in 1982 and 1983 caused the trend of pressure versus cumulative production of Dorchester Bryan No. 1 to

decrease somewhat more rapidly after 1975 and much more rapidly after 1981. Steeper decline in pressure curve for the Haiduk No. 1 well after 1975 due to increased production from Natural Gas Pipeline's Bednorz No. T-1 well located in Dorchester proration unit immediately south of the Dorchester Haiduk No. 1 proration unit. Production from respondents' leases primarily responsible for the sharp decline in the Dorchester Haiduk well pressure after 1982. Fact that respondents' gas-oil ratios increased suddenly from initial low levels to very high levels indicates that after they were completed initially in the granite wash the wells were subsequently completed in and produced gas from the brown dolomite. Gas production from respondents' lease has caused a marked reduction in pressure of the Dorchester wells. Pressure drop is evidence of drainage. Gas produced from respondents' leases is the same gas that would otherwise have been and would be produced from the Dorchester wells. Liquid produced on these leases is not oil, i.e., it was not liquid in the reservoir, wellbore, and at the surface. Respondents' production is not casinghead gas. Respondents' leases within this study area drain portion of the reservoir underlying the Dorchester acreage which would otherwise be drained by the Dorchester wells.

### Study Area

### Dorchester Well

7  
(Exhibit 104  
at 109-123  
Exhibits 47,  
48, 158-166)

Walker No. 1

White Deer  
Investment No. 1  
(Sections 182, 183)

203, 204, and 241,  
Block B3, I&GN  
RR Survey and Block  
B-2, H&GN RR  
Survey, Carson County)

<b>Respondent's Wells</b>	<b>Completion Date</b>
Prairie Koell Nos. 1 & 2	1983
Prairie Steel Nos. 1 & 2	1982
WyVel Hodges Nos. 1 & 2 and Coffee No. 1	1982 & 1983

## **Evidence**

Brown dolomite is uniformly thick and relatively flat. Pressure versus cumulative gas production trend for Dorchester's White Deer Investment No. 1 consistent 1966 to 1972, steeper slope after 1972 and again after mid-1982. Trend of pressure versus cumulative gas production linear for Dorchester Walker No. 1 from 1966 until 1974 when downward slope increased, with an extremely sharp drop in 1982. Wy-Vel Hodges No. 1 and four Prairie wells completed in brown dolomite. Wy-Vel Coffee No. 1 and Hodges No. 2 are perforated in granite wash up to the base of the brown dolomite. Wy-Vel Hodges only lease without a gas processing unit. In 1983 average daily production was 112 Mcf for Dorchester Walker No. 1, 65 Mcf for Dorchester White Deer Investment No. 1, and approximately 200 Mcf for Prairie Oil Company Steel and Koellk leases. In 1982 Dorchester Walker No. 1 produced an average of 250

Mcf per day. The 1983 drop in average daily production coincides with dramatic increase in gas-oil ratio from the Wy-Vel Hodges leases, increased gas production from the Omega Winters lease, and high gas-oil ratios from the Wy-Vel Coffee lease.

## Conclusion

Change in slope of pressure trend line of Dorchester's White Deer Investmednt No. 1 after 1972 due to increased production for non-respondents, Natural Gas Pipeline McEwen No. G-1 and Omega Energy Winters lease. Change in the same line for Dorchester's Walker No. 1 due to increased production from Natural Gas Pipeline's McEwen No. G-1 after 1974 and increased production from Prairie wells on the Steel and Koell leases beginning on 1982. Significant gas volumes from Wy-Vel Hodges and Coffee leases and Prairie Koell and Steel leases are being produced from brown dolomite, causing reduced pressure in the Dorchester wells and drainage from Dorchester's wells to respondents' leases. Respondents' leases are producing gas that would have been and would be produced from the two Dorchester wells. Likely that liquid produced from Wy-Vel Hodges lease is oil. Little, if any, liquid produced from the Wy-Vel Coffee, Prairie Koell and Prairie Steel leases is oil based on hydrocarbon analyses (Exhibit 91). What oil is produced is almost certainly not from the brown dolomite. Unlikely based on structure of brown dolomite that respondents wells would produce oil when Dorchester's wells do not. Almost all gas produced by respondents' leases is not casinghead gas because it is not indigenous to an oil stratum and produced from the stratum with oil. Respondents' wells are not necessary to effectively and efficiently drain portions of the reservoir drained by the Dorchester wells.



**Study Area****Dorchester  
Well**

8

(Exhibit 104  
at 124-164,  
Exhibits 49,  
54, 167-195)

Fields No. 1  
(Section 155,  
Block 3, I&GN  
RR Survey, Gray  
County)

Fields No. 2  
(Section 158;  
Block 3, I&GN  
RR Survey Gray  
County)

Bell No. 1  
(Section 156,  
134, Block 3,  
I&GN RR Survey  
Gray County)

Vaniman No. 1  
(Section 156 &  
157, Block 3,  
I&GN RR Survey  
Gray County)

Benedict No. 1  
(Section 133,  
Block 3, I&GN  
RR Survey)

**Respondent's  
Wells****Completion  
Date**

Caprock Engineers  
Zack Nos. 1 & 2

1983

Granite Production	1981,
Dennis Nos. 1, 2 & 4	1982
Aspen Harris Nos.	1981
1, 2, 5 & 6	
Aspen Fields Nos.	1981
3, 4, 7 & 8	
Raven Energy Jeanne	1982
Nos. 1 & 2	
Caddo Production	1981
Co. Faith No. 1	
Jody Oil Company	1981 &
Lloyd Nos. 2 & 3	
Panhandle Energy	1982
Alley Nos. 1 & 2	
Panhandle Energy	1983
Wade L No. 1	
Judy Oil Company	1981
Boddy Nos. 1 & 2	
Walker Operating	1983
Corp. O'Neal Nos.	
1, 3, & 4	
(Caddo Faith No. 2A	
and O'Neal No. 2	
recently completed	
but are not listed	
in Show Cause order)	
Kaari Future B Nos.	1983
1-15 & 2-16	
Walker Sargent Nos.	
1, 3 & 4	1983
Walker Burger No. 1	1983
Bink Ann Nos. 1 & 2	

Raven Energy Snapp

No. 1 & 4

Kaari Future Nos.

1-5, 2-6, 3 & 4

Kaari Randall Nos.

1 & 2 (incorporated

into future lease 11/83)

## Evidence

Brown dolomite continuous with little structural relief except slight dip from northeast to the southwest. All respondents' wells except Aspen Harris Nos. 1 and 6, Raven Jeanne No. 1, Caprock Zack No. 1, Kaari Future Nos. 3 & 1-5, and Raven Snapp No. 4 are open to production in the brown dolomite. Pressure versus cumulative gas production for Dorchester's Fields No. 2 was reasonably linear from 1966 through 1972, linear with a steeper slope from 1973 through 1981, and sudden drop in 1982-1984. Aspen Petroleum Fields lease and Aspen Petroleum Harris lease increased gas-oil ratio suddenly and substantially in January and February 1982. The gas-oil ratio for the Raven Energy Jeanne lease increased suddenly and substantially in October 1982. None of these leases have gas processing units. Wellhead pressure versus cumulative production for Dorchester Fiels No. 1 well shows reasonably linear trend from 1966 through 1982, with faster pressure drops after 1982. The gas-oil ratio for the Granite Production Dennis lease increased substantially in late 1982. The Caprock Zack lease showed initial gas-oil ratio of 613 for the No. 1 well and a gas volume too small to measure for the No. 2 well. Between 8/83 and 12/83 the gas-oil ratio for the lease was between 39,000 and 99,000 cubic feet of gas per barrel of oil. None of the leases on these two Dorchester proration units have gas processing facilities. Mobil well, adjacent to Dorchester Fields No. 1 production unit, completed in

the granite wash in 1983 has produced no gas. Pressure versus cumulative production trend line for Dorchester Bell No. 1 was reasonably linear from 1967 through 1977 and 1978 through 1981, with severe drop in 1982. Jody Oil Company Boddy and Bell leases have gas processing units. All the leases on the Dorchester Bell No. 1 proration unit has high gas-oil ratios in 1983 ranging from 20,600 to 101,621 cubic feet of gas per barrel of oil each month. Pressure versus cumulative gas production was reasonably linear for Dorchester Vaniman No. 1 from 1967 through 1974 and 1976 through 1981 with a rapid pressure decrease thereafter. Pressure versus cumulative production trend for Benedict No. 1 was linear from 1967 through 1973 and from 1974 until 1982. The slope of the trend line increased in 1974. From 1982 through May 1984 wellhead shut-in pressure dropped dramatically. Respondents' wells on Benedict No. 1 proration unit have high gas-oil ratios.

## **Conclusion**

**Dorchester Fields No. 2**--Respondents' leases on the Dorchester Fields No. 2 proration unit have cause sudden pressure drop in the Dorchester well beginning in 1981. Reduction evidences drainage from the Dorchester well. Respondents' gas production is gas that would otherwise have been and would be produced from Dorchester Fields No. 2 well. Respondents' leases on Dorchester Fields No. 1 proration unit and 3 wells on adjoining Judy Oil Company lease caused rapid decrease in wellhead pressure of Dorchester Fields No. 1 after 1982.

**Dorchester Fields No. 1**--Gas production from the Granite Dennis and Caprock Zack leases caused the pressure reduction in Dorchester Fields No. 1 well. This pressure reduction is evidence of drainage.

Respondents' leases are producing same gas that otherwise would have been and would be produced from the Dorchester Fields No. 1 well.

**Dorchester Bell No. 1--**Sharp decline in wellhead pressure in 1982 through 1984 in Dorchester Bell No. 1 due to gas production on respondents' leases as well as from production from Caddo Production Faith lease, the Panhandle Energy Wade L lease and the Walker Operating Corp. O'Neal lease. Pressure decline in 1977 due to increased production from the offsetting Conoco Bell lease. Respondents' gas production contributed substantially to marked reduction in Dorchester well. Pressure reduction evidences drainage from Dorchester well. Respondents are producing the same gas that would otherwise be produced by Dorchester well.

**Dorchester Vaniman No. 1--**Loss of wellhead pressure due to respondents' gas production from wells on this and other Dorchester proration units. Respondent Kaari Future B lease, with a gas-oil ratio in November 1983 of 60,000 cubic feet of gas per barrel of oil, contributed significantly to the drop in wellhead pressure of Dorchester's well in 1983.

**Dorchester Benedict No. 1--**Slight slope change of the pressure versus cumulative production trend line in 1974 due to production increase of Conoco Case No. 1 gas well. Pressure drops due to respondents' gas production on this Dorchester proration unit and perhaps respondents' production from wells located on eastern boundary of Section 156. Pressure drop is evidence of drainage from the Dorchester well to respondents' leases. Respondents' gas production is the same gas that otherwise would have been and would be produced from the Dorchester Benedict No. 1 well. Liquid attributed to these leases without processing units probably is crude oil. Almost certainly this crude

oil is not being produced from the brown dolomite based on Dorchester's experience. Most of the liquids from leases with processing units is not oil based on hydrocarbon analyses. Small amount that is oil is not from the brown dolomite. Respondents' gas is not casinghead gas because it is not indigenous to an oil stratum and produced from that stratum with oil.

<b>Study Area</b>	<b>Dorchester Well</b>
9 (Exhibit 104 at 165-172, Exhibits 55, 196-200)	Osborne No. 2 (Sections 108 & 109. Block 3, I&GN RR Survey, Gray County)
<b>Respondent's Wells</b>	<b>Completion Date</b>
3-W OIL, Inc. Arkie - Bill A No. 3 & No. 1	1982

### **Evidence**

Brown dolomite approximately 175 feet thick and dips gently to the northeast. Respondents' wells completed in the brown dolomite. Producing interval of Dorchester well and respondents' wells overlap. Pressure versus cumulative gas production of the Dorchester well shows a linear decline in pressure from 1966 through 1981 with departure thereafter. In 1983 respondents' two wells had gas-oil ratios ranging from 40,000 to 90,000 cubic feet per barrel of liquid. One gas processing unit serves both leases. When tested for production potential, both wells showed very little gas



production when perforated only in the granite wash as shown in form W-2s.

## **Conclusion**

Decline in pressure of the Dorchester well in 1982 primarily caused by production from the Arkie-Bill leases. Drop in pressure of the Dorchester well indicates drainage by respondents' wells. Fact that Dorchester's wells perforated in brown dolomite, use of gas processing unit, high gas-oil ratios, and low gas production when perforated only in granite wash indicates that almost all the gas produced from these leases comes from the brown dolomite and is therefore gas which otherwise would be produced by Dorchester's Osborne No. 2. Little, if any, of the liquid produced by respondents' wells is oil based on hydrocarbon analyses. Little liquid that may be oil is almost certainly not from the brown dolomite based on Dorchester's experience and structure of the brown dolomite. Respondents' gas is not casinghead gas because it is not indigenous to an oil stratum and produced from that stratum with oil. Respondents' wells drain the portion of the reservoir underlying the Dorchester acreage which the Dorchester well would drain, and they are not necessary to effectively and efficiently drain that portion of the reservoir.

## **Study Area**

## **Dorchester Well**

10  
(Exhibit 104  
at 173-187,  
Exhibits 56,  
57, 200-210

Witter No. 1-A

Witter No. 2

<b>Respondent's Wells</b>	<b>Completion Date</b>
Magnet Oil Inc. Dania No. 3	1982
Tumble Weed Linda Nos. 3 & 4	1982
Energy-Agri Products, Inc.	1981, 1982
Money Nos. 1 & 2, Peeler II No. 1, Peeler Nos. 2-4, and Henry Nos. 1-4	1983

### **Evidence**

In the area near Dorchester's Witter Nos. 1-A and 2 wells, the brown dolomite varies slightly in thickness but has little structural relief. In the area near Dorchester's Pope No. 1 the brown dolomite is of uniform thickness with a gentle structural dip to the southeast. All respondents' wells perforated in the brown dolomite. Pressure versus cumulative production from 1966 to May 1984 for the Dorchester Witter No. 1 shows increased downward slope after 1974, reasonably linear trend from 1975 until 1982 when it dropped sharply. Gas-oil ratios for respondent's Dania leases have gas processing units. Pressure versus cumulative production for the Witter No. 2 from 1966 was reasonably linear until 1981 and 1982 when the pressure trend flattened. Monthly gas-oil ratio for Linda lease ranged from 30,000 to almost 80,000 cubic feet per barrel. Pressure versus cumulative production trend for Dorchester Pope No. 11 linear from 1966 until 1983; pressure fell dramatically in 1984. Stock tank liquid from the Magnet Dania lease and Energy-Agri

leases contain almost no oil. Wellhead liquid sample from Energy-Agri Money lease 100 percent water. The three Energy-Agri leases have extremely high gas-oil ratios.

## **Conclusion**

**Dorchester Witter No. 1-A--**Two non-respondent wells may have caused increase in downward slope of pressure versus cumulative production graph after 1974. Dania No. 3 well largely responsible for the very rapid decline in pressure from 1982 forward. Respondent's lease producing same gas that Dorchester well would produced.

**Dorchester Witter No. 2--**Flattened pressure trend in 1981 and 1982 due to decreased production from Natural Gas Pipeline's Mauldin No. 1E well and treatment of Dorchester well in 1978 and 1979. Production from Tumble Weed Linda Nos. 3 & 4 will result ultimately in a significant decline in pressure of the Dorchester well. Respondent's producing the same gas that would otherwise be produced by Dorchester well.

**Dorchester Pope No. 1--**Dramatic drop in well pressure in 1984 due to dense development on leases surrounding the Dorchester well by Energy-Agri Products, Inc. Respondent's wells have higher gas-oil ratios than can be expected from oil wells located in an area producing gas only from the granite wash. Respondent is producing gas that otherwise would be produced by Dorchester well.

Very little, if any, liquid produced from respondents' leases is oil. Small amount of liquid which may be oil is almost certainly not produced from the brown dolomite. Based on Dorchester's experience and structure of

brown dolomite formation, highly unlikely that respondents' oil production comes from brown dolomite. Respondents' gas production is not casinghead gas because it is not indigenous to an oil stratum and produced from that stratum with oil. Respondents' wells drain the Dorchester wells and they are not necessary to effectively and efficiently drain the portions of the reservoir drained by the Dorchester wells.

### **Study Area**

### **Dorchester Well**

11

Bell No. 2

(Exhibit 104  
at 187-208,  
Exhibits 58-  
62, 211-227)

Bell No. 3

Case No. 1

Chadwick No. 1

Mongole No. 1  
(Sections 181,  
182, 183, 208,  
209, 210, 211,  
238 and 240,  
Block B-2, H&GN  
RR Survey and  
Section 130,  
Block 3, I&GN  
Survey, Gray and  
Carson Counties)

<b>Respondent's Wells</b>	<b>Completion Date</b>
Aspen Petroleum, Inc., Bell Nos. 1 & 3	1981
J.B. Watkins Bell Nos. 2-9, Bell A nos. 1 and 3	1978, 1979, 1980, 1981
3-W Oil, Inc Tieman Nos. 1-4	1981, 1982, 1983
Apen Petroleum, Inc. Warnick Nos. 1-4, Chadwick Nos. 7-9	1981
Wy-Vel Corp. Dennis No. 1	1982

### **Evidence**

Brown dolomite formation is continuous with uniform 200 foot thickness and little structural relief except in Watkins Bell and Aspen Bell leases. Brown dolomite encountered by wells on Watkins Bell and Bell A leases at approximately 475 feet above sea level and at about 750 feet above sea level in each of respondents' other wells. Dorchester Chadwick No. 1 originally drilled through brown dolomite into granite wash where there was a show of oil. Well was plugged back to granite wash marker. Pressure versus cumulative production curves for 1966 through April 1984 for the Dorchester wells are as follows:

Bell No. 2--reasonably linear 1966 to 1982, precipitous decline thereafter,

Bell No. 3--smooth decline until 1982, drastic decline thereafter,

Case No. 1--rather linear until 1978 when well treated and production improved, increased downward slope 1982-1984,

Chadwick No. 1 and

Mongole No. 1--pressure declined more rapidly beginning in 1982.

All respondents' wells are open in the brown dolomite. All leases except for watkins' Bell and Bell A have gas processing units. All respondents' leases have had gas-oil ratios from 40,000 cubic feet of gas and higher to one barrel of oil.

## Conclusions

Significant volumes of respondents' gas production is from the brown dolomite based on the fact that all respondents' wells are perforated in the brown dolomite, they produce substantial gas volumes at high gas-oil ratios, and Dorchester's wells within whose proration units respondents' wells are located have had marked declines in their pressure versus cumulative gas production trends. Pressure declines are explained by respondents' production and for Dorchester's Mongole No. 1 well gas production from offsetting non-respondent leases. Based on hydrocarbon analyses of liquid from processing unit on the Aspen Jones, Chadwick and Warnick leases, the liquid from 3-W Oil Tieman and the Wy-Vel Dennis leases is not oil. Outlet liquid from processing unit on Aspen Bell lease is probably not oil. Small amount of liquid from these



leases which may be oil is almost certainly not from the brown dolomite based on Dorchester's experience and the continuous structure of the brown dolomite. Respondents' wells, except for Watkins, are not producing casinghead gas because it is not indigenous to an oil stratum and produced from the stratum with oil. Respondents' wells are draining portions of the reservoir underlying Dorchester acreage that would otherwise be drained by Dorchester wells. Respondents' wells are not necessary to effectively and efficiently drain this portion of the reservoir. Based on proximity of Watkins leases to an old oil producing area of the field, the low structure of the brown dolomite, and the shape of the phase envelope for the wellhead gas from Watkins' Bell A No. 1, quite possible that Watkins wells are producing oil from the brown dolomite. Tentatively conclude that although it is possible that oil is being produced from the brown dolomite, not all gas from Watkins wells is produced with the oil. Reasons are that Bell and Bell A leases have high gas-oil ratios and that the shape of the phase envelope for the gas from the Bell A No. 1 well is somewhat different than the phase diagram for a well producing only casinghead gas.

### Study Area

12  
(Exhibit 104  
at 209-216,  
Exhibits 63,  
228-230)

### Dorchester Well

Evans No. 1  
(Section 153,  
Block B-2,  
H&GN RR  
Survey, Gray County)

<b>Respondent's Wells</b>	<b>Completion Date</b>
Security Petroleum Evans Nos. 1, 4, 6, 7 & 8	1981

### **Evidence**

Brown dolomite is of uniform thickness but appears about 85 feet higher in the Dorchester well than in respondents' wells. Evidence is that the brown dolomite drops slightly from north to south in this area. All respondent's wells perforated in the brown dolomite at levels corresponding to open hole completion interval of Dorchester well. Pressure versus cumulative production curve for the Dorchester well rather linear curve from 1966 through 1979. Well treated with hydraulic fracture in late 1978. Pressure and production improved in 1980, erratic movement of curve from 1980 to 1984. In 1982 and 1983 respondent's lease, which has a gas processing unit, has had substantial gas production and gas-oil ratios of from 41,500 to 85,000 Mcf per barrel of liquid.

### **Conclusion**

Treatment (hydraulic fracture) of Dorchester well in November 1978 caused improved production and pressure to offset whatever impact respondents' wells might have had. Expect that Dorchester well will be affected as respondent's wells continue significant gas production. Respondent's gas production comes from the brown dolomite and is the same gas that would otherwise be or have been produced by Dorchester well. Conclusion is based on perforations in the brown dolomite, high gas-oil ratios with substantial gas production, and existence of a gas processing unit.

Based on hydrocarbon analyses of the outlet liquid of gas processing units, the liquids manufactured from such units are not oil, therefore respondent's liquid probably is not oil. The small amount of liquid that may be oil is almost certainly not produced from the brown dolomite. Dorchester's wells perforated only in the brown dolomite produce no oil, and the formation is not sufficiently different to expect a different result in respondent's wells. Almost all respondent's gas is not casinghead gas because it is not indigenous to an oil stratum and produced from that stratum with oil. Respondent's wells are draining that portion of the reservoir which would otherwise be drained by the Dorchester well, and it is not necessary for effectiveness and efficiency that they do so.

### **Study Area**

### **Dorchester Well**

13

McBrayer No. 1  
(Sections 69,  
63, Block 7,  
I&GN RR Survey,  
Carson County)

(Exhibit 104  
at 216-223,  
Exhibits 64,  
231-234)

### **Respondent's Wells**

### **Completion Date**

Wy-Vel Corp.  
Patrick No. 1  
and Weinheimer  
Nos. 1 & 2

1981

### **Evidence**

Brown dolomite is of uniform thickness with little structural relief. Pressure versus cumulative

production curve for Dorchester well shows irregular downward trend from 1966 through 1976. All respondent's wells are perforated in the brown dolomite. In 1982 after respondent's wells were completed the Dorchester well was treated (cleaned out and acidized) which increased bottom-hole pressure. In 1982 and 1983 respondent's Patrick lease produced monthly between 3,500 and 10,132 Mcf of gas with gas-oil ratios as high as 100,000, and the Weinheimer lease produced monthly between 3,900 and 14,900 Mcf with gas-oil ratios as high as 99,900 cubic feet per barrel. Dorchester well averaged 23 Mcf per day in 1983 while Weinheimer lease averaged 74 Mcf and Patrick lease averaged 147 Mcf per day.

## Conclusion

Unclear from pressure versus cumulative gas production graph whether respondent's wells are causing significant drainage from Dorchester well; however, it is expected that such will occur. Significant volumes of respondent's gas production is from the brown dolomite. Weinheimer No. 1 is only open in this formation, and respondent's other wells are open in the brown dolomite and the granite wash. Liquids being produced by respondent's are not from the brown dolomite based on Dorchester's experience and uniformity of brown dolomite formation. Respondent's gas production is not casinghead gas because respondent's production is almost all from the brown dolomite. Because the oil produced is not from the brown dolomite, the gas is not indigenous to an oil stratum and produced from that stratum with oil. Respondent's wells are draining gas from that portion of the reservoir underlying the Dorchester acreage. Dorchester would otherwise produce this gas. Respondent's wells are not necessary to effectively and efficiently drain this portion of the reservoir.

<b>Study Area</b>	<b>Dorchester Well</b>
14  (Exhibit 104 at 224-233, Exhibits 65, 235-239)	Sheridan No. 3 (Section 206, Block B-2, H&GN RR Survey, Gray County)
<b>Respondent's Wells</b>	<b>Completion Date</b>
A&R Operting Co. (formerly Kim Petroleum) Sheridan Nos. 1 & 2	1981
Aspen Petroleum Sheridan Nos. 2, 4, 7 & 8	1981
Security Petroleum Sheridan Nos. 2 & 4	1980

### **Evidence**

Brown dolomite is continous and varies 50 feet in thickness and elevation (structural relief). All respondents' wells are perforated in the brown dolomite. Pressure versus cumulative gas production graph for the Dorchester well shows linear relationship from 1968 to 1981 with faster pressure decline thereafter. Each of respondents' leases produces substantial quantities of gas at gas-oil ratios generally ranging from 20,000 to 90,000 cubic feet of gas per

barrel of oil. The Aspen Petroleum lease has a gas processing unit.

## **Conclusion**

Significant volumes of respondents' gas come from brown dolomite. Sharp decline in pressure of the Dorchester well beginning in 1981 due to respondents' gas production. Reasons are that respondents' wells are open in the brown dolomite and have completion intervals that overlap those of the Dorchester well. Also, Aspen Sheridan Nos. 2 & 4 produced little gas when they were open only in the granite wash. Respondents' wells are producing and have produced gas that would otherwise be produced by the Dorchester well. Liquid produced from the A & R Sheridan and Security Petroleum leases is not from brown dolomite. Little, if any, of the liquid produced from the Aspen Sheridan lease is oil based on hydrocarbon analysis of outlet liquid of gas processing units. Small amount of liquid that is oil is almost certainly not from the brown dolomite. Reasons are that Dorchester's well does not produce oil from the brown dolomite and formation is continuous without substantial structural relief. Almost all respondents' gas is not casinghead gas because it is not indigenous to an oil stratum and produced from the stratum with oil. Respondents are draining portion of the reservoir which would be drained by the Dorchester well. Respondents' wells are not necessary to effectively and efficiently drain that portion of the reservoir.

## **Study Area**

## **Dorchester Well**

15  
No. 1

Coffee

(Sections 15



(Exhibit 104  
at 233-240,  
Exhibits 66,  
240-242)

& 16, Block 4,  
I&FN RR Survey,  
Carson County)

### **Respondent's Wells**

### **Completion Date**

Meyer Farms	1964,
Coffee Nos.	1967,
1, 2, & 3	1981

### **Evidence**

Pressure versus cumulative production graph for Dorchester well from 1966 through April 1984 is linear, which is typical for a gas well operating under normal circumstances. Slope of the curve increases after 1971. Meyer Farms Coffee and Crutchfield leases shut-in from 1976 to 1981. Dorchester well treated in 1978 and pressure decline curve flattened after that. According to well records and W-2s filed with the Railroad Commission respondent's wells only perforated in the granite wash. Respondent's lease does not have a gas processing unit.

Substantial gas production began in 1981. Meyer Farms Coffee lease has produced about 200,000 Mcf of gas since 1981. In 1982 and 1983 the monthly gas-oil ratio was consistently above 72,000 Mcf of gas per barrel of oil, typically 80,000 to 90,000 cubic feet per barrel. Stock tank liquid production in 1982 and 1983 averaged about 1,100 barrels a year.

### **Conclusion**

Accelerated pressure drop in Dorchester well after 1971 due to production by Natural Gas Pipeline No. 3-

T Crutchfield, Natural Gas Pipeline No. 1-T Crutchfield, and possibly by Meyer Farms Coffee and Crutchfield leases. Respondent's wells may be producing gas from the brown dolomite since other wells examined that are only perforated in the granite wash generally have small gas-oil ratios, 200 cubic feet or less per barrel of oil, and there is no structural variation in the brown dolomite and granite wash formations between these wells and respondent's wells. Additional persuasive evidence is that respondent does not have a gas processing unit, respondent's wells are not located in structurally low area of the brown dolomite, and wells have a high gas-oil ratio. Pressure versus cumulative production graph is not conclusive to the occurrence of drainage. If respondent's wells are perforated in the brown dolomite they could drain portions of the reservoir which would otherwise be drained by the Dorchester well. Respondent's wells are not necessary to effectively and efficiently drain that portion of the reservoir.

### **Study Area**

### **Dorchester Well**

16

(Exhibit 104  
at 241-275,  
Exhibits 67-  
71,243-263

Vanderburg No. 1  
(Section 113,  
Block B-2,  
H&GN RR  
Survey, Gray  
County)

Pinnell No. 1  
(Section 128,  
Block B-2,  
H&GN RR  
Survey, Gray County)

Ginn No. 1  
(Sections 126 &  
127, Block B-2,  
H&GN RR Survey)

Mathers No. 1  
(Section 144,  
Block B-2,  
H&GN RR Survey,  
Gray County)

Kinney No. 1  
(Section 114 &  
127, Block B-2,  
H&GN RR Survey)

**Respondent's  
Wells**

**Completion  
Date**

Dahalo Lease  
Corp. Vanderburg  
Nos. 1 & 2

1981

Vanderburg Exploration  
Vandy Nos. 1 & 2  
Vanderburg Exploration  
Sandy Nos. 1 & 2

1980

1982

Almac Big Bull Nos.  
1 & 2  
\*Zena-B Oil & Gas  
Inc. Ginn No. 1

1982

\*Vanderburg  
Exploration  
Sandy No. 1

1982

Sharon Lease Oil

1980,

Co. Sharon	1982,
Nos. 1-4	1983

Vanderburg Production	1982
Vanderburg No. 1	

Dahalo Vanderburg A No. 1	1981
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Omega Ginn Nos. 1-3	1980, 1981
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Zena-B Ginn Nos. 1 & 2	1983
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Stowers Mathers	1981,
Nos. 1 & 2	1982

**\*\*Omega Energy**  
Ginn, Nos. 1-3

Vanderburg Production Vanderburg No. 2	1982
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Stowers Mackie Nos. 1 & 2	1980
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\*Not on proration unit assigned to the Pinnell No. 1 but are adjacent to that unit.

\*\*Not an proration unit assigned to the Mathers No. 1 but an adjacent section.

## **Evidence**

Brown dolomite is relatively flat and uniformly thick with slight structural relief near Dorchester Pinnell

No. 1 and Mathers No. 1. Marked departure from the pressure versus cumulative production graph of Dorchester Vanderburg No. 1 coincided with gas production from respondents' leases. All respondents' wells perforated in the brown dolomite. Respondents' leases, except for Vanderburg Exploration Vandy, had gas processing units in May 1984. All three leases on the Dorchester Vanderburg proration unit had gas-oil ratios in the range of 90,000 cubic feet of gas to one barrel of oil from the summer of 1982 through much of 1983. In 1983 Dorchester Vanderburg well averaged 19 Mcf per day while in December 1983 respondents' wells averaged (per well) between 78 and 135 Mcf. Not apparent from pressure versus cumulative production curve that respondents' production is adversely affecting Dorchester Pinnell No. 1. The two wells on the Almac Big Bull lease are perforated in the brown dolomite and the lease has a gas processing unit. In the month these wells were completed they had initial gas-oil ratios of 688 cubic feet of gas per barrel. From July 1982 through December 1983, the gas-liquid ratio ranged from 37,000 to 99,000 cubic feet of gas per barrel. In 1983 Dorchester Pinnell produced an average of 10 Mcf daily, in December 1983 the Almac Big Bull wells averaged 119 Mcf per well daily.

Pressure versus cumulative production trend for Dorchester Ginn No. 1 showed a linear decrease from 1966 to 1981, with dramatic pressure drops in 1982-1984. Zena-B lease has gas-oil ratios in the range of 30,000 to 90,000 cubic feet per barrel; the ratios of the other leases are in the range of 80,000 to 90,000 cubic feet per barrel. From 1981 through 1983, Dorchester Ginn No. 1 produced approximately 0.1 Bcf of gas while respondents produced 1.65 Bcf. The Dorchester well averaged 10 Mcf per day in 1983, in December 1983 respondents' wells averaged 104 Mcf per day. The

Sharon, Vanderburg and Dahalo leases have gas processing units.

Linear trend of pressure versus cumulative gas production for Dorchester Mathers No. 1 for 1966 through 1980 with sharp drop thereafter. Gas-liquid ratio for the Stowers Mathers lease started out in the 200 to 500 cubic-feet per barrel range and increased rapidly to 40,000 cubic feet per barrel in September 1983. The Stowers Mathers wells have produced significant gas volumes. In December 1983 these wells each averaged 28 Mcf per day. Mathers No. 1 completed in brown dolomite and granite wash. Mathers No. 2 apparently completed only in granite wash.

Pressure versus cumulative production trend for Dorchester Kinney was reasonably linear from 1966 through 1981, pressure dropped drastically in 1982, 1983 and 1984. Vanderburg Production Vanderburg No. 2 and Stowers Mackie No. 1 perforated in brown dolomite. Former lease had initial low gas-liquid ratio, less than 500 Mcf, which increased dramatically in April 1982 so as to produce at ratios averaging 90,000 cubic feet per barrel through December 1983. The Vanderburg Production Vanderburg lease has a gas processing unit. Stowers Mackie lease began with a gas-liquid ratio of 657 cubic feet per barrel in 1980, increasing to ratios of between 15,000 to 64,000 cubic feet per barrel generally.

## **Conclusion**

**Dorchester Vanderburg No. 1**--Pressure drastically reduced from expected level based on historic trend line. Decrease followed increased production by respondents. Significant volume of respondents' gas comes from the brown dolomite based on change in pressure versus production curve of Dorchester well, which



coincides with respondents' production and respondents' overlapping perforations in the brown dolomite.

**Dorchester Pinnell No. 1**--Eventually Almac Big Bull No. 1 will adversely affect pressure versus production trend of Dorchester well. Significant volumes of gas production from the Big Bull wells is produced from the brown dolomite. Reasons are that the producing intervals overlap those of the Dorchester Pinnell well, the brown dolomite has little structural relief in this area and the Dorchester well produces only gas from the brown dolomite, and initially when neither Big Bull well was perforated in the brown dolomite they had insignificant gas production.

**Dorchester Ginn No. 1**--Respondents' large gas production explains the abrupt drop in the pressure versus cumulative production curve for the Dorchester well. Respondents' eleven wells are open in the brown dolomite. Significant volumes of respondents' gas production comes from the brown dolomite.

**Dorchester Mathers No. 1**--Significant gas volumes being produced by the Stowers Mathers lease from the brown dolomite. Sharp drop in pressure versus production curve from Dorchester well caused by gas production from Stowers Mathers Nos. 1 and 2 and offsetting respondents' wells in Section 126 and 127 on the Sharon Lease Oil Sharon lease and the Omega Ginn lease. Initial tests for both Stowers wells showed no gas or insignificant gas when these wells completed only in granite wash.

**Dorchester Kinney No. 1**--Rapid drop in well pressure beginning in 1982 because of gas production from the Stowers Mackie lease and the Vanderburg Production Vanderburg lease. The Vanderburg Production Vanderburg No. 1, and the Stowers Mackie

wells until August 1983, have produced significant gas volumes. Significant amounts of this gas are being produced from the brown dolomite formation. Evidence of this is fact that drop in pressure of the Dorchester well coincides with significant production by respondents, that initially Vanderburg No. 2 produced no gas when it was perforated only in the granite wash, and increased gas production occurred at the same time as it perforated the brown dolomite.

Respondents' wells have drained gas from Dorchester's wells. Respondents' gas production is the same gas that would otherwise be produced by Dorchester. It is more than likely that the liquid produced from the Omega Energy Ginn, Zena-B Ginn, Stowers Oil Mackie and Mathers, and Vanderburg Exploration Vandy leases is oil not produced from the brown dolomite formation. The hydrocarbon analysis on the outlet liquid of gas processing units on the Dahalo Vanderburg A lease, the Vanderburg Production Vanderburg lease, the Almac Big Bull lease and the Vanderburg Exploration Sandy lease, indicates that very little, if any, of the liquid produced from such unit is oil. The small amount of liquid produced from the Sharon Lease Oil Sharon lease that may be oil almost certainly is not produced from the brown dolomite formation. No engineering explanation for the moderate gas-oil ratios from the Stowers Mackie and Mathers leases which do not appear to have gas processing units. Oil produced on these leases is not from the brown dolomite. Dorchester wells do not produce oil and brown dolomite formation has little structural relief. Almost all gas produced from these leases is not casinghead gas because it is not indigenous to an oil stratum and produced from that stratum with oil. Respondents' wells are draining gas from portion of the reservoir that would otherwise be drained by Dorchester wells, and it is not necessary that they do so.